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SCRIPPS INSTITUTION OF OCEANOGRAPHY LA JOLLA CALIF
PHYSICAL AND CHEMICAL DATA REPORT EXHIBIT SPHERES II - MAY 1975

JUN 75

F/G 8/10
N00014-75-C-0152

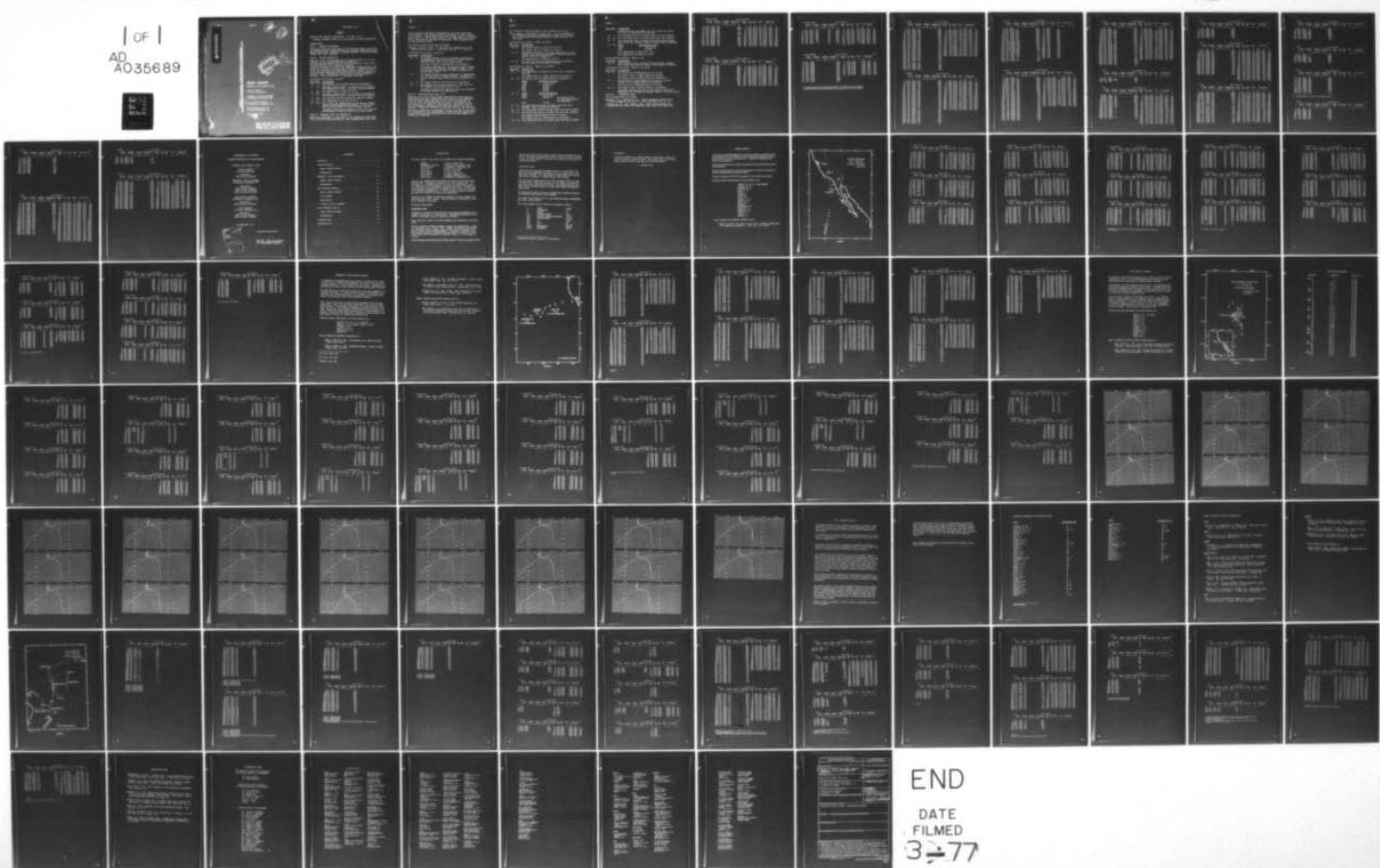
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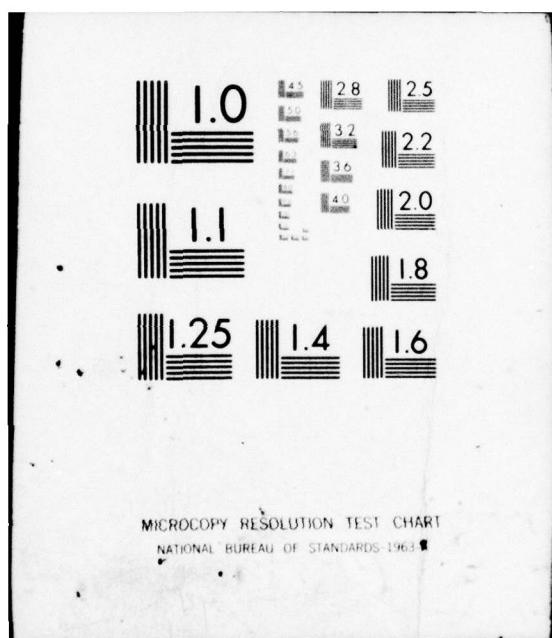
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963

ADA 035689

UNIVERSITY OF CALIFORNIA SAN DIEGO INSTITUTION OF OCEANOGRAPHY



see
1473
in back

data report

PHYSICAL AND CHEMICAL DATA

EXHIBIA Expedition
16 July-10 August 1966

SPHERES II, MAI HAI Expedition
6 September-29 September 1966

BUOY BOUNCE Expedition
13 September-19 September 1966

NOVA Expedition Legs I-VI
23 April-30 September 1967

NSO Reference 75-14
1 June [redacted]

1976

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PERMIT FULLY LEGIBLE PRODUCTION

September, 1976

ERRATA

PHYSICAL AND CHEMICAL DATA REPORT SIO Ref. 75-14
EXJIBIA, SPHERES II-MAI HAI, BUOY BOUNCE and NOVA EXPEDITIONS

INTRODUCTION

Page 3 STANDARD PROCEDURES

Dissolved oxygen was determined by the Winkler method as revised by Carpenter (1965) using the specific equipment described in the Marine Technician's Handbook on Oxygen Analysis, section entitled, "macro-rig" (1971, page 20).

Page 6 EXJIBIA Expedition

Cape San Lucas, not indicated on the position chart, is at the southern tip of the Baja California peninsula.

Salinity was determined with an Australian Autolab (1960) inductive salinometer, not a Hytech as reported.

Original recordings for 364 S/T/D lowerings to approximately 600 meters are on file in the SIO data archives. Although this data is not yet available for publication, the S/T/D data from the stations where hydrocasts were made has been used to improve the quality of the interpolated data at most of the hydrographic stations. This revised data is available from NODC.

Corrections by station: pp 8-15

Page Stat. Corrections

8 1 The salinity at 98 meters should be footnoted U.

11 21 Footnote A should read: A) An error of -0.01000 in the conductivity ratio (.393 ppt) has been assumed.

12 207 The temperature at 203m is 9.18°C.

13 265 Footnote A should read: A) An error of 0.01000 in the conductivity ratio (.391 ppt) has been assumed.

13 266 The corrected bottom sounding in meters is 3469m.

14 277 The temperature at 76m is 13.51°C.

15 365 The A after the temperature at 155m and the corresponding footnote should be deleted. A new A footnote has been added with the corrected listing.

Corrected listings for stations 1, 207, 277, and 365 are attached to replace those in the data report.

Page 17 SPHERES II-MAI HAI Expedition

Since the publication of this report, the temperature data from this cruise has been reprocessed. Most temperatures below 2500

ERRATA - 2

meters are now available to thousandths, and there have been some changes in the sampling depths, typically 20 meters deeper at the bottom. Bottom depths have been revised based on soundings made closer in time to the tripping of the deep cast and corrected for the depth of the ship's transducer. This corrected data is available from NODC.

The paper by Mantyla has been published:

Mantyla, Arnold W., 1975. On the potential temperature in the abyssal Pacific Ocean. J. Mar. Res., 33, No. 3: 341-354.

Corrections by station: pp 20-22

Page Stat. Corrections

20 3 All oxygen values on cast II should be decreased by approximately 1.2%, the result of an error in the standard value used in the computations.

The oxygen value at 4299m should be footnoted U.

There were problems with the Precision Depth Recorder (PDR) on this station. Because of this, a possible corrected bottom depth of 4540 is probably no better than ± 25 m.

20 4 All oxygen values should be decreased by approximately 1.2% (see stat. 3 comment above). In addition the uncorrected oxygen value at 4324m should be 3.78 ml/L.

21 5 The oxygen value at 3631m should be footnoted U.

22 7 The temperature at 2939m should be 1.58°C with the "U" omitted. The value of DT is 34.7.

Corrected listings for stations 3 and 4 are attached to replace those in the data report.

Page 49 NOVA Expedition Legs I-VI

Reevaluation of the salinity data from NOVA III using vertical sections of salinity, temperature, and stability and comparison with sections in Reid and Lynn (1971) led to corrections of +.005 to -.020 ppt being applied to much of the salinity data for stations 10 through 20. Incorrect cell constants, the result of improper standardization, had been used at the time of analysis. Corrected listings of depth and salinity are attached.

Salinity is reported to hundredths on NOVA V because of uncertainty in operation of the salinometer, and because the samples were stored in the lab approximately three weeks between sample collection and analysis.

ERRATA - 3

The following should be added to the reference for Leg I:

Reid, Joseph L. and Ronald J. Lynn, 1971. On the influence of the Norwegian-Greenland and Weddell seas upon the bottom waters of the Indian and Pacific Oceans. Deep Sea Res., 18: 1063-1088.

Corrections by station: NOVA I pp 56-59

Page Stat. Corrections

- 56 H 1 The oxygen value at 1471m is 0.56 ml/L.
The oxygen value at 2453m is 2.30 ml/L.

57 H 3 The Nansen bottles at 4204 and 4703m appear to have leaked. The salinity and oxygen values at these two depths should be footnoted U.
The temperature at 5782m is 1.49°C.

59 H 6 The salinity value at 4629m should be footnoted U, and the value of DT should be deleted.

Corrections by station: NOVA III pp 62-65

Page Stat. Corrections

- 62 7 The temperature at 4526m is 1.33°C; the U should be omitted.
The oxygen value at 4996m should be footnoted U.

62 10 The depth value at 5389m should be footnoted U.

<u>Depth</u>	<u>Corrected salinity</u>
828m	34.547 ppt
1012	34.594
1506	34.645
2018	34.645
5921	34.708

63 12 Depth Corrected salinity
 4045m 34.707 ppt
 4986 34.704 The oxygen value
 at this depth should
 be footnoted U.
 5643 34.708
 63 13 The salinities from 4607 through 5306m have been
 changed. The U's should be omitted.
 63 14 The salinities from 65 through 1066m have been changed.
 63 15 The salinities from 89 through 857m have been changed.
 The oxygen concentration at 89m is 4.12ml/L.
 The oxygen value at 392m should be footnoted U.
 64 16 The salinities from 11 through 1141m have been changed.

Page Stat. Corrections

Footnote B) has been added, and the U after the salinity value at 505m should be omitted.

64 17 The salinities from 11 through 1048m have been changed.

64 18 The salinities from 24 through 1032m have been changed.

65 19 The salinities from 11 through 5931m have been changed.
The U after the salinity value at 5829m should be omitted.

65 20 Depth Corrected salinity

5118m	34.710 ppt
5801	34.708

The temperature at 5509m is 1.31°C.

The temperature at 5865m is 1.36°C.

Corrections by station: NOVA V p 66

Page Stat. Corrections

66 H 67 The salinities from 1 through 2144m have been changed.
The U after the salinity value at 655m should be omitted.

Corrections by station: NOVA VI pp 67-68

Page Stat. Corrections

67 1 The salinity at 7992m should be 34.712 ppt.

The oxygen value at 8587m should be deleted.

The oxygen value at 9982m should be footnoted U.

67 2 The salinity at 7274m should be 34.709 ppt, and the
oxygen at this depth should be footnoted U.

The salinity at 8256m should be 34.710 ppt.

68 4 The oxygen value at 2812m should be footnoted U.

Corrected listings for most of the stations from NOVA
Expedition are attached to replace those in the data report.

Page 20: LITERATURE CITED

The following should be added:

Anderson, G. C., Compiler, 1971. "Oxygen Analysis", Marine Technician's Handbook, SIO Ref. No. 71-10, Sea Grant Pub. No. 11.

Autolab Ind. Pty. Ltd., Sydney, 1960. Inductively Coupled Salinometer MK III, Model 601, Operating Inst. and Ills. Parts List.

RV THOMAS WASHINGTON

EXHIBIA EXPEDITION

1

	LATITUDE 25 00.0N	LONGITUDE 118 30.0W	PO/C4Y/VR 07/16/66	MESSINGER TIME 1021 6MT	BOTTOP 3507P	WIND 100	SPEED 15KT	WEATHER 1	DOWNTANT 020	WAVES 06		
Z	T	S	02	P04 S103 N02 N03	DT	Z	T	S	02	SIGT	DT	DD
0	20.99	34.378	5.19		367.7	0	20.99	34.378	5.19	24.044	387.7	0
25	20.99	34.375	5.24		367.9	10	20.99	34.377	5.21	24.043	387.8	.029
49	20.86	34.375	5.61		364.6	26	20.99	34.376	5.23	24.042	387.9	.078
74	16.28	34.056	5.68		344.2	35	20.96	34.375	5.32	24.049	387.2	.116
98	17.54	33.816U	5.62		36	20.77	34.360	5.61	24.091	383.3	.194	
118	15.03	33.600	4.73		298.8	75	18.25	34.062	5.60	24.514	343.0	.245
148	12.39	33.000	4.01		239.2	100	17.13	34.122	5.54	24.630	312.9	.368
197	10.50	34.047	2.78		188.0	125	14.32	32.769	4.23	25.149	278.6	.443
247	10.18	34.108U	1.18		156	12.27	32.607	3.96	25.632	236.5	.508	
297	9.77	34.397	.59		150.3	200	18.48	34.069	2.67	26.163	186.1	.615
346	9.34	34.468	.67		138.2	250	10.16	34.332	1.12	26.424	161.3	.705
395	8.51	34.499	.37		123.4	300	9.75	34.403	.59	26.546	149.5	.785
495	7.43	34.466	.23		110.6	400	8.94	34.499	.36	26.834	122.4	.928
594	6.58	34.458	.36		108.0	500	7.58	34.465	.25	26.965	110.0	1.052
692	5.77	34.466	.29		89.5	600	6.83	34.459	.54	27.078	99.3	1.165
792	5.04	34.465	.33		81.2	700	5.70	34.466	.25	27.198	88.7	1.268
890	4.62	34.464	.00		76.8	800	5.00	34.465	.33	27.273	86.8	1.362
990	4.23	34.484	.58		71.2	1000	4.20	34.490	.60	27.382	70.5	1.532

RV THOMAS WASHINGTON

EXHIBIA EXPEDITION

207

	LATITUDE 30 01.0N	LONGITUDE 117 54.0W	PO/C4Y/VR 07/26/66	MESSINGER TIME 2006 6MT	BOTTOP 3204P	WIND 200	SPEED 09KT	WEATHER 1	DOWNTANT 200	WAVES 03 07		
Z	T	S	02	P04 S103 N02 N03	DT	Z	T	S	02	SIGT	DT	DD
0	18.26	33.426	5.56		389.3	0	18.26	33.426	5.50	24.827	389.3	0
25	17.54	33.438	5.58		372.5	10	18.09	33.426	5.53	24.075	324.8	.039
49	15.94	33.399	5.94		339.3	21	17.76	33.434	5.56	24.153	377.3	.077
74	14.80	33.357	6.00		316.5	30	17.22	32.425	5.66	24.275	365.8	.114
99	14.30	33.408	5.99		304.6	50	15.88	33.397	5.54	24.563	338.3	.165
124	12.63	33.415	5.27		271.9	75	14.79	33.359	6.00	24.776	318.0	.257
153	10.70	33.614	4.48		226.0	100	14.24	33.408	5.68	24.927	303.6	.346
203	9.18	33.889	3.64		178.7	125	12.56	32.421	5.24	25.270	270.2	.418
252	8.31	33.999	3.34		157.6	150	10.92	33.569	4.56	25.714	228.8	.481
307	7.59	34.057	2.24		143.2	200	9.23	33.877	3.67	26.223	180.4	.585
356	7.10	34.129	.99		131.2	250	8.30	33.997	3.35	26.457	158.1	.672
406	6.76	34.190	.37		122.0	300	7.67	34.051	2.41	26.595	144.7	.750
510	5.99	34.276	.38		106.3	400	6.70	34.189	.41	26.828	123.0	.889
606	5.52	34.339	.25		96.0	500	6.06	34.269	.36	26.990	107.6	1.011
703	5.04	34.397	.27		86.3	600	5.55	34.336	.26	27.108	96.6	1.120
806	4.62	34.429	.34		79.4	700	5.05	34.396	.27	27.212	86.6	1.219
905	4.28	34.457	.48		73.8	800	4.64	34.428	.33	27.284	79.7	1.311
1010	3.95	34.480	.56		68.8	1000	3.98	34.478	.56	27.396	69.2	1.477

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

277

	LATITUDE 30 46.0N	LONGITUDE 117 04.0W	MO/DAY/YR 08/07/66	MESSENDER TIME 0601 GPT	BOTTCP 2098F	WIND 310	SPEED 08KT	WEATHER 1	DOMINANT WAVES 02 00						
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
1	19.72	33.52	5.53		.00	417.8	0	19.72	33.52	5.53	23.729	417.8		0	
26	17.08	33.41	5.72		.00	363.5	18	16.76	33.48	5.58	23.942	397.5	.041		
51	14.48	33.30	6.00		.00	316.1	20	17.71	32.44	5.66	24.166	375.9	.080		
76	13.51	33.31	6.04		.01	296.3	30	16.61	32.29	5.79	24.390	354.8	.116		
101	11.38	33.44	6.91		.00	247.7	50	14.57	33.30	6.07	24.719	317.7	.184		
150	10.06	33.72	6.22		.01	205.0	75	13.54	32.71	6.04	24.996	297.1	.261		
200	9.16	34.00	2.82		.01	170.1	100	11.47	33.43	4.96	25.493	249.7	.330		
250	8.56	34.12	2.04		.00	152.2	125	10.47	33.58	4.49	25.786	221.9	.389		
300	7.72	34.11	1.80		.01	141.0	150	10.06	33.72	4.22	25.964	205.0	.443		
350	7.26	34.16	1.23		.01	131.0	200	9.16	34.00	2.82	26.331	170.1	.539		
401	6.84	34.21	.79		.00	121.8	250	8.56	34.12	2.04	26.520	152.2	.622		
450	6.55	34.24	.97		.00	115.9	300	7.72	34.11	1.40	26.658	141.0	.697		
499	6.23	34.28	.45		.01	108.9	400	6.85	34.21	.80	26.839	122.0	.834		
								500	6.23	34.28	26.977	108.9	.956		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

365

	LATITUDE 30 57.0N	LONGITUDE 116 38.5W	MO/DAY/YR 08/10/66	MESSENDER TIME 2352 GPT	BOTTCP 1021F	WIND 330	SPEED 07KT	WEATHER 1	DOMINANT WAVES 300 02 07						
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
0A	20.2	33.62			422.5	0	20.20	33.620	23.600	422.5		0			
36	15.77	33.372			337.6	10	19.81	33.580	23.754	415.4	.042				
48	14.46	33.301			315.7	20	18.60	32.518	24.012	390.8	.082				
58	13.70	33.303			302.0	30	17.04	33.439	24.329	360.5	.120				
87	11.69	33.304			257.2	50	14.30	32.302	24.835	312.4	.187				
97	11.06	33.304			253.2	75	12.45	33.349	25.244	273.5	.261				
106	11.24	33.452			244.4	100	11.39	33.403	25.484	250.6	.327				
136	9.98	33.731			202.9	125	10.31	33.611	25.836	217.2	.386				
146	10.24	33.871			196.7	150	10.12	33.894	26.090	193.0	.438				
155	9.90	33.910			188.3	200	9.23	34.056	26.363	167.1	.530				
183	9.50	34.002			175.2	250	8.73	34.128	26.499	159.2	.612				
194	9.29	34.042			169.0	300	8.13	34.159	26.616	143.1	.689				
205	9.21	34.064			166.1	400	6.82	34.173	26.814	129.3	.829				
235	9.07	34.116			160.2										
245	8.84	34.129			156.1										
254	8.65	34.130			152.0										
294	8.23	34.160			144.5										
343	7.38	34.198			133.5										
403	6.00	34.175			123.9										

A) THE SURFACE TEMP AND SALINITY ARE FROM BUCKET SAMPLES. THE INTERPOLATED DATA BETWEEN 0 AND 50 METERS ARE BASED ON THE XBT COVE AT THIS STATION AND THE GENERAL SHAPE OF THE T-S CURVE (FORM 4.53 FOR STATION 364, OCCUPIED APPROXIMATELY 12 HOURS EARLIER AT THE SAME POSITION).

RV HORIZON

MAI MAI EXPEDITION

3

Z	T	S	02	PO4	S103	N02	N03	DT	MAI MAI EXPEDITION								
									09/15/66		MESSANGER TIME		BOTTOM		WIND		SPEED
LATITUDE		LONGITUDE		09/15/66		1900 2220 GMT		4540F		070		14KT		1		060 08 09	
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD		
0	26.57	34.524	4.68					533.5	0	26.57	34.524	4.68	22.510	533.5	0		
10	26.56	34.523	4.69					533.3	10	26.56	34.523	4.69	22.520	533.3	.053		
49	26.58	34.527	4.66					533.6	20	26.57	34.526	4.66	22.519	533.4	.107		
99	23.40	34.621	5.04					420.3	30	26.57	34.525	4.66	22.519	533.4	.160		
198	15.34	34.649	3.72					249.9	50	26.58	34.530	4.66	22.519	533.4	.267		
296	9.50	34.624	1.98					153.6	75	24.80	34.480	4.68	23.182	470.1	.393		
399	8.68	34.635	.38					123.2	100	23.33	34.420	5.04	23.724	418.3	.505		
496	7.34	34.667	.38					109.3	125	21.60	34.770	4.84	24.175	375.3	.605		
594	6.44	34.679	.48					96.7	150	20.50	34.720	4.57	24.435	350.4	.697		
791	5.17	34.699	.57					80.1	200	15.17	34.442	3.68	25.523	246.9	.849		
988	4.36	34.530	.86					69.1	250	11.00	34.320	2.77	26.119	190.3	.962		
1183	3.74	34.555	1.16					61.1	300	9.47	34.514	1.62	26.526	151.6	1.050		
1380	3.26	34.580	1.38					54.8	400	8.67	34.535	.30	26.827	123.1	1.194		
1576	2.84	34.595	1.68					50.0	500	7.30	34.467	.38	26.979	106.7	1.318		
1773	2.43	34.611	1.91					45.4	600	6.29	34.480	.48	27.112	96.0	1.429		
1970	2.15	34.630	2.13					41.7	700	5.68	34.490	.53	27.211	86.7	1.529		
2093A	2.08	34.639	2.31					40.5	800	5.13	34.501	.58	27.267	79.5	1.621		
2166	1.98	34.643	2.38					39.5	1000	4.32	34.532	.48	27.402	68.5	1.788		
2269A	1.93	34.647	2.44					36.8	1200	3.69	34.557	1.18	27.468	60.5	1.937		
2363	1.86	34.653	2.57					37.8	1500	3.00	34.591	1.51	27.580	51.7	2.136		
2485A	1.82	34.657	2.68					37.2	2000	2.13	34.633	2.18	27.689	41.4	2.418		
2682A	1.73	34.664	2.76					36.1	2500	1.81	34.658	2.61	27.724	37.1	2.665		
2878A	1.67	34.672	2.82					35.0	3000	1.64	34.673	2.90	27.759	34.7	2.859		
3074A	1.62	34.673	2.95					34.6	3500	1.53	34.683	3.19	27.775	33.3	3.118		
3270A	1.58	34.676	3.04					34.1	4000	1.45	34.690	3.60	27.786	32.2	3.340		
3466A	1.54	34.683	3.16					33.3									
3662A	1.50	34.683	3.32					33.0									
3760A	1.49	34.689	3.40					32.5									
3858A	1.48	34.690	3.56					32.3									
3956A	1.46	34.689	3.57					32.3									
4054A	1.45																
4153A	1.44	34.691	3.72														
4202A	1.44	34.694	3.76														
4252A	1.44	34.697	3.76														
4299A	1.43	34.696	3.87U														
4349A	1.43	34.696	3.83														
4436A	1.43	34.698	3.86														
4446A	1.42	34.697	3.84														

RV HORIZON

MAI MAI EXPEDITION

4

Z	T	S	02	PO4	S103	N02	N03	DT	MAI MAI EXPEDITION								
									09/18/66		MESSANGER TIME		BOTTOM		WIND		SPEED
LATITUDE		LONGITUDE		09/18/66		1910 0125 GMT		5272F		060		14KT		1		060 05 05	
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD		
0	25.61	35.103	4.74					463.2	0	25.61	35.103	4.74	23.253	463.2	0		
59	22.90	34.980	5.20					395.0	10	25.61	35.100	4.74	23.251	463.4	.046		
99	20.10	35.011	4.87					319.2	27	25.61	35.100	4.74	23.251	463.4	.093		
197	13.86	34.506	4.25					230.1	30	25.61	35.100	4.74	23.251	463.4	.139		
493	6.02	34.204	1.82					112.0	50	25.61	35.100	4.74	23.251	463.4	.232		
788	4.62	34.675	.89					75.9	75	21.60	35.700	5.07	24.349	358.7	.336		
982	4.06	34.522	.95					66.7	100	20.03	35.007	4.86	24.778	317.8	.421		
1277	3.26	34.557	1.39					56.5	125	18.31	34.660	4.71	25.107	286.5	.497		
1570	2.66	34.596	1.68					48.4	150	16.63	34.650	4.58	25.351	263.3	.567		
1862	2.20	34.623	2.04					42.7	200	13.72	34.295	4.22	25.721	228.1	.693		
2156	1.94	34.639	2.35					39.5	250	11.61	34.175	3.64	26.042	197.6	.802		
2452	1.76	34.654	2.63					37.0	300	9.83	34.122	3.06	26.316	171.6	.897		
2745	1.65	34.667	2.77					35.3	400	7.25	34.138	1.98	26.727	132.6	1.055		
3041	1.59	34.672	2.98					34.5	500	5.95	34.211	3.01	26.957	110.7	1.184		
3237	1.56	34.683	3.08					33.4	600	5.27	34.320	.89	27.127	94.6	1.293		
3433	1.53	34.684	3.21					33.1	700	4.99	34.460	.87	27.271	81.0	1.388		
3443A	1.52	34.682	3.23					33.2	800	4.58	34.478	.94	27.331	75.3	1.475		
3532	1.52	34.683	3.26					33.1	1000	4.01	34.525	.97	27.430	66.0	1.623		
3541A	1.52	34.686	3.28					32.9	1200	3.46	34.550	1.27	27.505	58.8	1.777		
3630	1.51	34.684	3.30					33.0	1500	2.79	34.568	1.58	27.597	50.1	1.969		
3639A	1.50	34.685	3.31					32.9	2000	2.06	34.632	2.19	27.694	41.0	2.243		
-3731	1.50	34.686	3.39					32.8	2500	1.74	34.657	2.66	27.739	36.7	2.483		
3738A	1.50	34.688	3.39					33.2	3000	1.60	34.672	2.95	27.761	34.6	2.718		
3829	1.48	34.687	3.40					32.6	3500	1.52	34.683	3.25	27.776	33.2	2.933		
3838A	1.48	34.688	3.43					32.5	4000	1.47	34.687	3.54	27.782	32.5	3.155		
3933A	1.48	34.686	3.50					32.6	4500	1.45	34.695	3.84	27.791	31.8	3.379		
4030A	1.47	34.688	3.63					32.4	5000	1.46	34.700	3.98	27.794	31.4	3.		

BY APGO

NOVA EXPEDITION 1

H 3

LATITUDE	LONGITUDE	MO/DAY/YR	PASSENGER	TIME	BOTTOP	WIND	SPFED	WEATHER	DOMINANT WAVES						
25 49.7N	175 50.5E	05/04/67	0115	1510 GMT	5897F	KT									
Z	T	S	O2	PC4	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
0	22.8	35.493						359.8	0	22.80					
4A	22.78	35.432	5.10					359.2	10	22.76			5.11		
29A	22.68	35.426	5.14					356.9	20	22.72			5.13		
46A	21.57	35.377	5.33					330.6	30	22.63			5.15		
66B	20.52	35.267	5.32					306.3	50	21.30			5.33		
90B	19.43	35.211	5.47					248.1	75	19.94			5.37		
136B	18.24	35.063	5.54					270.1	100	19.13			5.49		
208C	17.12	34.793	5.32					263.6	125	18.48			5.52		
313C	14.51	34.575	4.92					223.5	150	18.01			5.51		
418C	11.70	34.350	4.74					186.3	200	17.24			5.36		
476D	10.12	34.227	4.73					168.5	250	16.16			5.14		
570D	7.51	34.074	3.65					140.8	300	14.67			4.56		
624D	6.28	34.0716	2.986					125.1	400	12.19			4.94		
660D	5.50	34.0576	2.726					116.9	500	9.43			4.56		
739D	4.90	34.0886	2.176					107.9	600	6.81			3.26		
785D	4.50	34.1786	1.386					97.0	700	5.11			2.50		
1009B	3.52	34.3686	.886					75.7	800	4.40			1.35		
1064E	3.41	34.3846	.906					70.9	1000	3.54			.90		
1128E	3.24	34.4356	.956					65.5	1200	3.07			1.05		
1432E	2.62	34.5366	1.486					52.6	1500	2.50			1.60		
1735E	2.14	34.5916	2.016					44.6	2000	1.95			2.35		
2030E	1.94	34.6256	2.396					40.5	2500	1.84			2.81		
42C4C	1.48	34.6480	2.550						3000	1.73			3.19		
4422F	1.44	34.6599	3.84					31.4	3500	1.63			3.49		
4703C	1.45	34.6670	.900						4000	1.52			3.71		
5057F	1.46	34.700	4.14					31.4	4500	1.44			3.90		
5301C	1.44	34.700	4.04					31.3	5000	1.46			4.13		
5543F	1.48	34.703	4.24					31.4	5500	1.47			4.20		
5641F	1.48	34.703						31.4							
5739F	1.48	34.702	4.23					31.4							
5782F	1.49	34.706	4.19					31.2							

RV ARGO

NOVA EXPEDITION III

7

RV ARGO

NOVA EXPEDITION III

10

Z	T	S	02	PO4	SIC3	NO2	NO3	DT	NOVA EXPEDITION III						DOMINANT WAVES 080 07 10	
									06/29/67	1410	1620	GMT	BOTTOM 6152F	WIND 080	SPEED 13KT	WEATHER 2
0C 28.0	34.23								598.6	0	28.0	34.23		21.838	598.6	0
11C 28.00	34.24	4.62							597.8	10	28.00	34.24		21.845	597.9	.060
31C 28.00	34.25	4.63							597.1	20	28.00	34.24	4.62	21.849	597.5	.120
69C 27.02	34.29	0	4.50						520.1	30	28.00	34.25	4.63	21.853	597.2	.180
88C 24.68	34.28	0	5.06						445.0	50	27.51	34.40	4.74	22.127	570.9	.297
107C 21.60	34.24	4.70							363.0	75	26.39	34.44	4.50	22.688	498.1	.431
126C 18.84	34.22	4.97							302.1	100	22.76	34.56	4.91	23.995	392.4	.543
159C 14.64	34.15	3.10							230.1	125	16.98	34.83	4.11	24.914	304.8	.631
182C 12.61	34.07	0	2.81						194.1	150	15.67	34.59	3.32	25.528	246.4	.701
208C 11.13	34.08	.87							159.4	200	11.48	34.54	1.48	26.348	162.6	.807
236C 10.75	34.08	.46							145.5	250	10.56	34.70	.46	26.642	140.6	.887
291C 10.05	34.07	0	.45						130.9	300	9.95	34.72	.47	26.758	129.6	.958
354C 9.41	34.07	.62							124.4	400	9.02	34.64	.62	26.857	120.2	1.090
509C 8.15	34.06	.61							110.7	500	8.22	34.60	.61	26.950	111.4	1.214
662C 6.82	34.06	.68							95.5	600	7.34	34.57	.65	27.055	101.5	1.330
828C 5.74	34.04	7.0	1.89						83.1	700	6.55	34.55	.77	27.150	92.5	1.437
1012C 4.77	34.04	9.40	1.36						68.6	800	5.90	34.55	1.01	27.228	85.0	1.536
1506C 3.01	34.04	9.45	1.90						47.6	1000	4.83	34.59	1.35	27.392	69.5	1.713
2028C 2.10	34.04	9.45	2.55						40.2	1200	3.98	34.62	1.58	27.511	58.3	1.863
2445A 1.64	34.05	9.45	2.75						37.2	1500	3.03	34.65	1.89	27.622	47.8	2.054
3394A 1.52	34.06	9.45	3.37						33.4	2000	2.12	34.65	2.53	27.700	40.3	2.324
3487A 1.50	34.07	9.49	3.49						33.3	2500	1.81	34.66	2.77	27.737	36.9	2.565
4060A 1.36	34.07	9.41	4.01						31.2	3000	1.62	34.68	3.03	27.763	34.4	2.794
4542A 1.30	34.07	9.43	4.30						30.1	3500	1.50	34.68	3.50	27.775	33.3	3.016
5030A 1.32	34.07	9.45							29.8	4000	1.37	34.69	3.97	27.794	31.5	3.234
5389B 1.33	34.05	9.45	4.65U							4500	1.30	34.70	4.32	27.807	30.2	3.445
5518A 1.36	34.07	9.47	4.57						30.4	5000	1.32	34.71	4.45	27.811	29.8	3.657
5871A 1.40	34.07	9.42	4.52						30.4	5500	1.36	34.71	4.57	27.805	30.4	3.877
5921A 1.40	34.07	9.49	4.58						30.4	6000	1.42	34.71	4.56	27.803	30.6	4.107
5970A 1.41	34.07	9.48							30.5							
6019A 1.42	34.07	9.45							30.7							
6039A 1.42	34.07	9.40							30.5							
6040B 1.41	34.07	9.48							30.8							
6059A 1.42	34.07	9.48							30.7							

RV ARGO

NOVA EXPEDITION III

12

Z	T	S	02	PO4	SIC3	NO2	NO3	DT	NOVA EXPEDITION III						DOMINANT WAVES 060 04 09	
									06/28/67	0610	1620	GMT	BOTTOM 5722F	WIND 070	SPEED 13KT	WEATHER 2
3 28.0	34.15								629.5							
4045A 1.32	34.707	4.18							30.0							
4986A 1.29	34.704	3.89U							30.0							
5643A 1.36	34.708								30.2							

RV ARGO

NOVA EXPEDITION III

13

Z	T	S	02	PO4	SIC3	NO2	NO3	DT	NOVA EXPEDITION III						DOMINANT WAVES 080 06 09	
									06/28/67	2303	1618	GMT	BOTTOM 5375F	WIND 110	SPEED 08KT	WEATHER 1
3D 29.0	34.49								611.5	0	29.0	34.99	21.703	611.5	0	
10B 29.00	34.503	4.55							619.6	10	29.00	34.503	4.55	21.712	610.6	.061
53B 28.98	34.507	4.60							607.1	20	28.98	34.504	4.56	21.721	609.8	.122
62B 28.98	34.525	4.58							605.8	26	28.95	34.505	4.57	21.729	609.0	.163
110P 26.13	34.777	3.98							502.1	50	28.91	34.707	4.60	21.746	607.4	.305
137P 21.10	34.794	3.58							360.5	75	28.15	34.620	4.44	22.082	575.2	.454
198P 11.43	34.883	1.56							164.4	100	26.97	34.758	4.08	22.568	528.7	.593
382C 8.32	34.620	1.62							111.5	125	23.49	34.777	3.74	23.644	425.9	.713
599C 6.44	34.560	1.18							90.6	150	16.76	34.715	3.10	24.884	307.8	.806
796C 5.29	34.548	1.71							78.4	200	11.46	34.584	1.56	26.398	163.8	.926
1014C 4.44	34.56	1.90							67.7	250	10.55	34.582	1.58	26.549	147.5	1.007
2496C 1.83	34.661	3.22							37.0	300	9.73	34.689	1.59	26.700	135.1	1.081
3881C 1.42	34.692								31.8	400	8.12	34.610	1.57	26.977	106.9	1.210
4125C 1.32	34.695								30.9	500	7.10	34.697	1.35	27.103	96.9	1.320
4371C 1.27	34.705								29.8	600	6.43	34.660	1.18	27.170	90.5	1.322
4687D 1.24	34.708	4.49							29.0	700	5.79	34.446	1.01	27.242	83.6	1.519
4617C 1.24	34.710								29.2	800	5.27	34.440	1.02	27.301	78.2	1.609
4866C 1.28	34.704								29.9	1000	4.50	34.448	1.06	27.403	68.5	1.776
5066C 1.28	34.705								29.9	1200	3.91	34.476	2.17	27.479	61.3	1.976
5256C 1.31	34.706								30.0	1500	3.17	34.602	2.05	27.573	52.4	2.128
5262D 1.31	34.710	4.96							29.7	2000	2.29	34.442	2.07	27.683	41.9	2.417
5306C 1.32	34.708								29.9	2500	1.63	34.462	3.22	27.736	37.0	2.665
									3000	1.68	34.472	3.62	27.745	35.1	2.897	
									3500	1.53	34.464	3.96	27.775	33.2	3.171	
									4000	1.37	34.467	4.04	27.775	31.4	3.326	
									4500	1.25	34.786	4.45	27.810	29.6	3.546	
									5000	1.07	34.705	4.53	27.811	29.7</		

RV ARGO

NOVA EXPEDITION III

18

	LATITUDE 1 58.08	LONGITUDE 179 01.0W	PO/DAY/YR 07/02/67	MESSINGER TIME 1210 GHT	BOTTOM 5585P	WIND 090	SPEED 08KT	WEATHER 1	DOMINANT WAVES 130 04 08					
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD	
0	28.1	35.37	4.4			519.8								
24	27.95	35.371	4.59			515.0								
96	27.82	35.366	4.62			511.3								
153	20.44	35.302	2.97			265.1								
209	15.18	35.189	3.04			192.5								
282	11.14	34.813	2.57			142.4								
374	10.02	34.742	1.92			124.8								
512	7.38	34.576	2.10			101.7								
1032	4.61	34.562	2.12			69.3								

RV ARGO

NOVA EXPEDITION III

19

	LATITUDE 4 01.4S	LONGITUDE 178 49.5W	PO/DAY/YR 07/03/67	MESSINGER TIME 0015 1033 GHT	BOTTOM 5964P	WIND 150	SPEED 08KT	WEATHER 1	DOMINANT WAVES				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD
0	29.0	35.40	4.7			546.2	0	29.0	35.400	4.7	22.385	546.2	0
118	28.73	35.382	4.57			538.9	10	28.75	35.383	4.58	22.456	539.4	.054
54	28.64	35.387	4.66			535.7	20	28.71	35.385	4.59	22.470	538.1	.108
87A	28.16	35.361	4.49			508.0	30	28.69	35.387	4.61	22.479	537.2	.162
145A	25.66	36.053	3.56			396.4	50	28.65	35.387	4.65	22.493	535.9	.270
206A	17.71	35.386	2.64			234.2	75	28.39	35.485	4.58	22.650	520.8	.403
315A	9.70	34.718	2.27			125.4	100	27.91	35.724	4.31	22.991	488.3	.530
419A	8.48	34.638	1.96			112.6	125	26.92	35.948	3.92	23.478	441.8	.647
641A	6.14	34.551	2.32			87.6	150	25.06	36.001	3.47	24.098	382.6	.751
834A	4.98	34.549	2.33			74.3	200	18.56	35.450	2.72	25.495	249.6	.913
1054A	4.20	34.566	2.31			64.8	250	13.58	35.046	2.49	26.327	170.4	1.021
1720B	2.52	34.630	2.72			44.7	300	10.36	34.793	2.32	26.747	130.6	1.100
2098B	2.11	34.653	2.92			39.7	400	8.70	34.652	2.00	26.912	115.0	1.230
3246B	1.57	34.691	3.54			32.9	500	7.54	34.693	2.03	27.042	102.7	1.347
3924B	1.37	34.697	3.98			31.1	600	6.52	34.599	2.22	27.158	91.7	1.452
4623C	1.26	34.705	4.42			29.7	700	5.72	34.547	2.32	27.252	82.8	1.549
4655B	1.26	34.712	4.51			29.2	800	5.14	34.547	2.33	27.322	76.1	1.637
4950B	1.24	34.712	4.58			29.1	1000	4.36	34.561	2.31	27.421	66.8	1.808
5246B	1.27	34.713	4.55			29.2	1200	3.74	34.581	2.37	27.501	59.2	1.946
5540B	1.31	34.714	4.64			29.4	1500	2.95	34.611	2.55	27.600	49.8	2.148
5825C	1.34	34.706	4.68			30.2	2000	2.19	34.649	2.87	27.696	40.7	2.416
5836B	1.34	34.709	4.64			30.0	2500	1.85	34.672	3.13	27.742	36.3	2.658
5931B	1.36	34.706	4.62			30.3	3000	1.63	34.687	3.40	27.771	33.6	2.885
						3500	1.48	34.694	3.69	27.787	32.1	3.103	
						4000	1.35	34.698	4.01	27.800	30.9	3.316	
						4500	1.27	34.703	4.34	27.810	30.0	3.524	
						5000	1.24	34.712	4.57	27.819	29.1	3.731	
						5500	1.30	34.714	4.63	27.816	29.3	3.943	

RV ARGO

NOVA EXPEDITION III

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	LATITUDE 7 42.5S	LONGITUDE 178 24.1W	PO/DAY/YR 07/04/67	MESSINGER TIME 0750 0250 GHT	BOTTOM 6027M	WIND 680	SPEED 08KT	WEATHER 1	DOMINANT WAVES 140 04 10				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD
0	28.7	35.49	4.6			530.2	0	28.7	35.490	4.6	22.553	530.2	0
10A	28.58	35.467	4.58			528.0	10	28.58	35.467	4.58	22.575	528.0	.053
52A	28.60	35.487	4.60			527.2	20	28.58	35.472	4.58	22.577	527.8	.106
83A	28.60	35.46	4.38			522.0	30	28.59	35.476	4.59	22.579	527.6	.159
138A	27.80	35.778	4.86			471.8	50	28.60	35.486	4.60	22.583	527.2	.264
195A	23.04	36.095	3.56			318.5	75	28.60	35.541	4.38	22.624	523.3	.396
300A	13.98	35.026	2.46			179.8	100	28.26	35.649	4.22	22.811	515.5	.526
398A	8.80	34.666	2.48			114.3	125	27.66	35.733	4.11	23.013	486.2	.651
614A	6.44	34.574	2.67			89.6	150	26.74	35.863	3.97	23.472	442.4	.769
800A	5.30	34.596	2.48			77.3	200	22.58	36.052	3.50	24.871	389.0	.960
1015A	4.40	34.546	2.63			66.3	250	18.14	35.985	2.93	25.704	229.7	1.099
1557B	2.80	34.613	3.10U			46.3	300	13.98	35.126	2.46	26.230	179.8	1.205
2045B	2.19		3.16			400	470	34.665	2.40	26.911	115.1	1.361	
2536B	1.79	34.671	3.28			36.0	500	7.69	34.614	2.53	27.037	103.2	1.478
2970B	1.65	34.684	3.58			30.0	600	6.59	34.579	2.65	27.163	91.2	1.584
3363B	1.54	34.689	3.71			33.2	700	5.84	34.563	2.60	27.249	83.1	1.688
3751B	1.45	34.696	3.96			31.7	800	5.70	34.546	2.40	27.310	77.3	1.770
4141B	1.28	34.710	4.67			29.5	1000	4.95	34.546	2.43	27.399	68.6	1.936
4336B	1.26	34.710	4.62			29.3	1200	3.73	34.562	2.53	27.487	60.5	2.045
4531B	1.28	34.711	4.58			29.0	1500	2.88	34.607	2.71	27.604	49.5	2.280
4726B	1.27	34.709	4.49			29.5	2000	2.17	34.659	3.12	27.706	39.8	2.552
4923B	1.26	34.708	4.54			29.5	2500	1.81	34.672	3.27	27.746	36.0	2.771
5067C		34.725U	4.63			30.0	3000	1.64	34.694	3.51	27.768	33.9	3.016
5111B	1.28	34.710	4.64			29.5	3500	1.51	34.648	3.78	27.780	32.7	3.237
5314B	1.30	34.706	4.61			29.9	4000	1.34	34.706	4.29	27.800	30.2	3.450
5509B	1.31	34.709	4.64			29.8	4500	1.29	34.711	4.52	27.816	29.4	3.645
5801B	1.36	34.708	4.63			32.2	5000	1.27	34.709	4.19	27.815	29.5	3.862
5965C	1.36	34.708	4.71			30.2	5500	1.31	34.709	4.60	27.812	29.8	4.076
5702B	1.36	34.710	4.72			30.0							

BY ABIGAIL

NOVA EXPEDITION 111

10

LATITUDE 2 09.8N	LONGITUDE 170 57.9W	MC/DAY/YR 06/30/67	PASSENGER TYPE 0911 GHT	BOTTOP 5399P	WIND KT	SPECI AL	WEATHER	DOMINANT WAVES				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	C2	SIGT	DT
0	28.6	34.97					564.3					
65	28.06	35.172	4.48				532.8					
109	28.00	35.243	4.27				525.8					
158	17.04	34.710	3.45				267.4					
206	12.68	34.805	3.08				170.8					
273	11.35	34.802	2.48				146.8					
379	9.54	34.697	1.68				120.4					
627	6.30	34.561	1.68				88.8					
821	5.00	34.559	2.01				74.1					
1066	4.54	34.553	2.23				67.2					

BY ARGO

NOVA EXPEDITION III

15

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENGER	TIME	BOTTOP	WIND	SPEED	WEATHER	DOMINANT WAVES					
1 00.6N	179 08.2W	07/01/67	0210	GRT	4967P	170	08KT	1	150 05 09					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT
0	28.5	35.80						556.1						
89	27.66	35.373	4.12					505.9						
138	21.06	35.076						339.1						
196	16.72	35.057	3.34					235.6						
254	12.50	34.892	2.83					161.0						
313	11.06	34.786	2.34					143.0						
392	9.42	34.690	2.06U					123.1						
857	5.15	34.598	2.11					76.2						

BY ARGO

NOVA EXPEDITION III

16

LATITUDE	LONGITUDE	PO/DAY/YR	MESSENGER	TIME	BOTTOF	WIND	SPEED	WEATHER	DOMINANT WAVES					
0 01.0S	179 07.9W	07/01/67	1110	1556 GMT	5413F	120	08KT	1						
Z	T	S	O2	PO4	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT
0	28.0	35.40	4.5						514.5					
11	27.78	35.381	4.50						509.0					
50	27.47	35.369	4.56						500.3					
108	26.04	35.355	4.03						457.9					
132	21.97	35.5400	3.45						329.5					
167	20.28	35.581	3.08						282.5					
215	14.64	35.814	3.28						194.0					
241A	13.20	34.950	3.17						170.0					
261	12.88	34.910	3.21						166.0					
317	11.35	34.826	2.92						145.1					
340A	10.74	34.780	1.78						137.9					
392A	9.22	34.690	1.90						119.9					
505A	7.56	34.595	2.00						102.7					
825A	5.32		2.01											
1141A	3.92	34.573	2.39						61.5					

B) A RECORDED ERROR OF 10 OHMS (.501 PCT) HAS BEEN ASSUMED.

BY ARGO

NWPA EXPEDITION 111

5

LATITUDE 1 00.15	LONGITUDE 179 00.00	MO/DAY/YR 07/02/67	MESSENGER 0031	TIME GMT	BOTTOM 5494F	WIND 340	SPEED 08KT	WEATHER 1	DOMINANT WAVES 100 04 20					
Z	T	S	02	P04	SIGT	R02	R03	DT	Z	T	S	02	SIGT	DT
0	28.1	35.37	0.7						519.8					
11	27.08	35.367	4.67						513.1					
84	27.69	35.369	0.51						509.4					
129	25.03	35.564	3.69						413.1					
220	14.48	35.054	3.27						187.8					
513	11.01	34.803	2.49						148.3					
383	7.69	34.713	1.97						124.2					
523	7.24	34.568	2.25						100.4					
854	5.15	34.567	2.19						74.8					
1048	4.34	34.569	2.28						67.8					

RV ARGO

NOVA EXPEDITION V

H 67

	LATITUDE 29 56.0S	LONGITUDE 176 43.5E	MO/DAY/YR 09/06/67	PASSENGER 0013	MESSAGER TIME 0013 GMT	BOTTOP 9260P	WIND KT	WEATHER 2	DOMINANT WAVES						
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
1	17.70	35.62						217.0							
12	17.67	35.60						217.7							
198	16.22	35.51						191.5							
392	15.40	35.14						160.0							
635	9.14	34.63						123.2							
645	9.02	34.70	U												
655	8.83	34.63						118.4							
877	6.23	34.59	U												
1169	4.19	34.46						72.6							
1656	2.72	34.58						50.1							
2144	2.13	34.63						41.6							
2631	1.92	34.68						36.2							
5117	1.85	34.69						35.0							
3603	1.86	34.69						35.0							
4091	1.92	34.69						35.5							

RV ARGO

NOVA EXPEDITION VI

1

	LATITUDE 31 45.0S	LONGITUDE 177 19.0U	MO/DAY/YR 09/20/67	PASSENGER 0540	MESSAGER TIME 0010 GMT	BOTTOP 9992P	WIND KT	WEATHER	DOMINANT WAVES						
Z	T	S	C2	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
10	17.62	35.632	5.27			214.2	0	17.62	35.632			25.867	214.2	0	
35	17.42	35.623	5.29			210.3	10	17.62	35.632	5.27	25.867	214.2	.021		
48	17.35	35.630	5.58			208.2	20	17.55	35.627	5.28	25.880	213.0	.043		
88	16.92	35.618	5.20			199.2	30	17.47	35.624	5.29	25.898	211.3	.064		
126	16.02	35.505	4.84			187.5	50	17.34	35.631	5.56	25.934	207.8	.106		
166	15.44	35.490	5.16			176.8	75	17.11	35.630	5.35	25.990	202.5	.158		
204	14.68	35.394	5.03			167.1	100	16.64	35.581	5.08	26.062	195.6	.209		
289	13.16	35.21	4.75			150.2	125	16.04	35.508	4.85	26.145	187.8	.257		
381	11.52	35.004	4.74			135.0	150	15.66	35.495	5.01	26.223	180.4	.305		
475	9.76	34.759	4.50			123.3	200	14.76	35.405	5.05	26.354	168.0	.394		
590	8.12	34.569	4.65			112.5	250	13.84	35.292	4.86	26.464	157.5	.479		
718A	6.72	34.436	4.86			103.4	300	12.97	35.186	4.75	26.562	146.2	.559		
9468	5.40	34.452U	4.55U			400	11.15	34.952	4.69	26.729	132.4	.708			
9654	5.15	34.416	4.61			86.1	500	9.36	34.710	4.51	26.852	120.7	.845		
1053B	4.58	34.425	4.22			79.3	600	7.99	34.555	4.67	26.946	111.8	.971		
1667B	2.82	34.537	5.82			54.0	700	6.89	34.950	4.88	27.022	104.6	1.090		
1947B	2.52	34.607	3.48			46.4	800	6.34	34.447	4.78	27.094	97.8	1.202		
2064B	2.43	34.622	3.67U			44.5	1000	4.86	34.410	4.33	27.246	83.4	1.405		
2516B	2.11	34.655	3.42			39.5	1200	3.91	34.447	4.07	27.377	76.9	1.581		
3096B	1.80	34.699	4.06			33.9	1500	3.03	34.506	3.87	27.510	56.4	1.806		
3212B	1.76	34.723	4.19			31.8	2000	2.48	34.615	3.47	27.646	45.5	2.119		
4074B	1.16	34.728	4.00			27.3	2500	2.12	34.655	3.62	27.707	39.7	2.389		
4864B	1.06	34.720	4.81			27.3	3000	1.84	34.648	3.94	27.756	35.1	2.635		
6005C	1.17	34.720	4.57			28.0	3500	1.56	34.724	4.39	27.806	30.3	2.854		
7000C	1.30	34.716	4.56			29.2	4000	1.21	34.728	4.75	27.833	27.7	3.046		
7992C	1.46	34.712	4.67			30.5	4500	1.11	34.724	4.81	27.838	27.3	3.234		
A587C		34.714				5000	1.06	34.720	4.78	27.837	27.3	3.421			
9161C	1.67	34.714	4.53			31.8	5500	1.10	34.720	4.68	27.835	27.6	3.613		
9679C	1.75	34.714	4.59			32.4	6000	1.17	34.720	4.57	27.830	26.0	3.824		
9982C	1.82	34.739U	4.26U			6500	1.23	34.718	4.56	27.825	24.5	4.026			
						7000	1.30	34.716	4.56	27.818	29.2	4.250			
						7500	1.38	34.714	4.62	27.811	29.9	4.457			
						8000	1.46	34.712	4.67	27.804	30.5	4.739			
						8500	1.55	34.713	4.62	27.798	31.1	5.005			
						9000	1.64	34.714	4.56	27.792	31.7	5.286			
						9500	1.72	34.714	4.51	27.786	32.2	5.583			

RV ARGO

NOVA EXPEDITION VI

2

	LATITUDE 31 11.0S	LONGITUDE 177 00.0W	PO/DAY/YR 09/24/67	MESSENGER TIME 1921 GMT	BOTTOP 8774F	WIND 270	SPEED 22KT	WEATHER 1	DOMINANT WAVES 270 08 08				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD
3335	1.62	34.761U	4.09										
4322	1.17	34.723	4.43				27.8						
5307	1.10	34.720	4.61				27.6						
6291	1.19	34.641U	4.59										
7274	1.34	34.709	4.09U			30.0							
8256	1.50	34.710	4.40			31.0							

RV ARGO

NOVA EXPEDITION VI

4

	LATITUDE 27 28.0S	LONGITUDE 175 28.0E	PO/DAY/YR 09/27/67	MESSENGER TIME 0923 1423 GMT	BOTTOP 4632F	WIND 160	SPEED 04KT	WEATHER 2	DOMINANT WAVES 160 03 12					
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD	
0	20.3	35.559				284.6		0	20.3	35.559		25.126	284.6	0
35	20.09	35.601	5.20			276.3	10	20.24	35.571			25.151	252.3	.028
49	19.70	35.652	5.27			262.8	20	20.18	35.583			25.177	279.9	.057
99	18.62	35.673	4.89			234.9	30	20.12	35.595			25.202	277.5	.080
167	17.47	35.684	4.77			212.8	50	19.68	35.653	5.27	25.364	262.1	.139	
226	16.25	35.500	4.69			192.9	75	19.10	35.682	5.12	25.536	245.7	.203	
293	14.88	35.367	4.55			173.2	100	18.60	35.672	4.89	25.654	234.5	.264	
391	12.69	35.103	4.43			149.1	125	18.17	35.657	4.22	25.749	225.4	.322	
489	10.83	34.882	4.47			132.0	150	17.75	35.629	4.78	25.832	217.5	.379	
605	8.66	34.639	4.58			115.2	200	16.80	35.548	4.70	26.000	201.6	.446	
732	7.36	34.501	4.73			107.0	250	15.76	35.455	4.60	26.169	185.5	.507	
888	6.00	34.419				95.7	300	14.72	35.348	4.54	26.319	171.3	.620	
1056	4.90	34.432	4.26			82.2	400	12.51	35.082	4.43	26.572	147.3	.849	
1173	3.92	34.470	4.02			69.2	500	10.60	34.854	4.48	26.753	139.1	.999	
1467A	2.96	34.576	3.92			52.4	600	8.74	34.648	4.57	26.904	115.8	1.133	
1829A	2.35	34.629	3.49			43.4	700	7.63	34.528	4.70	26.979	108.6	1.257	
2186A	2.12	34.655	3.58			39.6	800	6.73	34.454	4.69	27.047	102.2	1.370	
2501A	2.08	34.662	3.51			38.8	1000	5.27	34.420	4.40	27.207	87.1	1.587	
2378A	2.02	34.675	3.54			37.4	1200	3.78	34.481	3.95	27.418	67.0	1.763	
2812A	1.90	34.676	3.77U			36.4	1500	2.89	34.584	3.43	27.589	51.3	1.971	
3248A	1.86	34.688	3.59			35.2	2000	2.25	34.640	3.49	27.685	41.0	2.253	
3346A	1.85	34.69	3.56			35.0	2500	1.96	34.673	3.55	27.735	37.1	2.503	
3463A	1.84	34.681	3.62			35.6	3000	1.88	34.681	3.58	27.747	35.9	2.743	
3707A	1.86	34.690	3.65			35.0	3500	1.84	34.682	3.62	27.751	35.5	2.926	
417CA	1.90	34.680	3.66			36.1	4000	1.88	34.685	3.66	27.750	35.6	3.230	
4597A	1.95	34.684	3.66			36.1	4500	1.94	34.683	3.66	27.745	36.1	3.502	

UNIVERSITY OF CALIFORNIA

SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

EXJIBIA Expedition
16 July-10 August 1966

Sponsored by
Office of Naval Research

SPHERES II, MAI HAI Expedition
6 September-29 September 1966

Sponsored by
Office of Naval Research
National Science Foundation
Marine Research Committee

BUOY BOUNCE Expedition
13 September-19 September 1966

Sponsored by
National Science Foundation

NOVA Expedition
23 April-30 September 1967

Sponsored by
Office of Naval Research
National Science Foundation

SIO Reference 75-14

ASSIGNMENT TO:	White Section	<input checked="" type="checkbox"/>
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W. A. Nierenberg, Director

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INTRODUCTION

The data presented in this report were collected on the following Expeditions:

EXJIBIA	16 July-10 August 1966
SPHERES II, MAI HAI	6 September-29 September 1966
BUOY BOUNCE	13 September-19 September 1966
NOVA Leg I	23 April-15 May 1967
NOVA Leg II	4 June-8 June 1967
NOVA Leg III	22 June-27 August 1967
NOVA Leg V	27 August-6 September 1967
NOVA Leg VI	20 September-30 September 1967

The data were obtained from Nansen bottle casts and S/T/D lowerings (BUOY BOUNCE only). Preceding the tabulated data for each Expedition are: 1) a description of the principal purpose of the cruise and the sponsoring agency, 2) a description of all "non-standard" procedures (see below), 3) a list of scientific personnel participating in the collection of data, and 4) a list of publications utilizing the Expedition data. A chart showing the positions of hydrographic and S/T/D stations also precedes the tabulated data.

These data were collected and processed primarily by the Data Collection and Processing Group (DCPG, MLRG), Scripps Institution of Oceanography, University of California at San Diego.

STANDARD PROCEDURES

Hydrographic Casts

Temperature was measured with paired deep sea reversing thermometers and is tabulated to hundredths of a Celsius degree. Unprotected thermometers were included in most bottles lowered to deeper than 100 meters.

Water samples for chemical and nutrient analyses were obtained from the Nansen bottles.

With the exception of EXJIBIA Expedition, salinity was determined with a conductive salinometer (Univ. of Wash., 1960). Salinity is recorded to three decimal places provided it meets accepted standards. The values are recorded to two decimal places when only one determination per sample was obtained, or where there is doubt about the accuracy of a particular sample, or of all samples on a station.

Dissolved oxygen was determined by the Winkler method as revised by Carpenter (1965).

The observed data have been evaluated using the method described by Klein (1973). This involves consideration of their variation as functions of density or depth and their relations to each other, and comparison with previous or adjacent observations.

TABULATED DATA

Nansen bottle data are listed with observed values on the left side of the page and with interpolated and calculated values at standard depths on the right side of the page. The values listed at standard depths are computer interpolations according to a modified Rattray (1962) technique.

The time given for bottle casts is that of the messenger release in Greenwich Mean Time. When more than one cast was lowered on a station the times for the first and last casts are given. The observed depths of multiple casts are footnoted except for the cast which includes the shallowest Nansen bottle.

The bottom depth, listed in meters, was determined by applying corrections from Matthews (1939) tables to echo soundings.

The weather and dominant waves are coded using the National Oceanographic Data Center (NODC) method.

The column headings from the computer are explained as follows:

Z	Depth	meters
T	Temperature	°C
S	Salinity	‰
O2	Dissolved oxygen	ml/L
PO4	Inorganic phosphate-phosphorus	µg at/L
NO2	Nitrite-nitrogen	µg at/L
DT	δ_T	cl/ton
SIGT	σ_t	g/L
DD	$\Delta D^{1/}$	dyn. m
CHLA	Chlorophyll-a	mg/m ³
PHAE	Phaeophytin	mg/m ³

^{1/} Geopotential anomaly, referred to the sea surface.

FOOTNOTES

In addition to footnotes, one special notation is used without a footnote because the meaning is always the same. Values which seem to be in error without apparent reason are indicated by the following notation:

u: uncertain value

EXJIBIA Expedition

The purpose of EXJIBIA Expedition was to study the boundary region between the westward extension of the California Current and the North Equatorial Current in the area between Cape San Lucas and 120°W. EXJIBIA was sponsored by the Office of Naval Research.

Salinity was determined with a Hytech (now Plessey Environmental Systems) inductive salinometer.

Nitrite was determined with a DU spectrophotometer according to the method described by Bendschneider and Robinson (1952).

Original recordings for 364 S/T/D lowerings are on file in SIO data archives.

Scientific personnel participating in the data collection were:

Wooster, Dr. W. S., Chief Scientist
Fiadeiro, M. E.
Gonzales, R. E.
Jones, J. H.
Kalin, G.
Kramer, A.
Kruse, M.
Lam, R. K.
Mantyla, A. W.
Muus, D. A.
Noson, D.
Rosendahl, D. V.
Sievers, H. A.
Simmons, V. P.
Wilson, W. H.
Wirth, D.
Wooster, D.

A paper resulting from EXJIBIA Expedition data is:

Wooster, Warren S. and James H. Jones, 1970. California Undercurrent off northern Baja California. *J. Mar. Res.*, 28: 235-250.

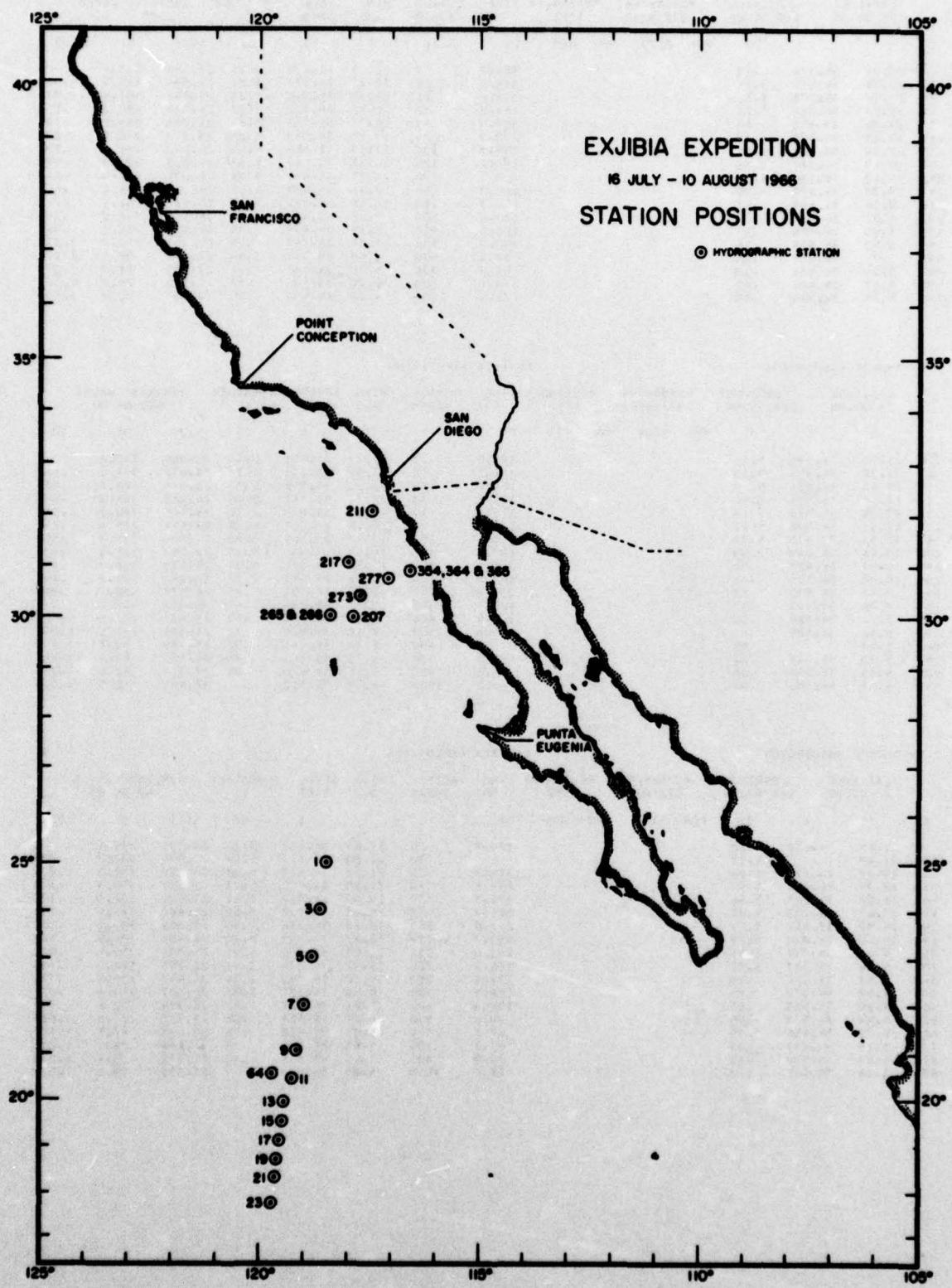


FIGURE I

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

1

	LATITUDE 25 00.0N	LONGITUDE 118 30.0W	MO/DAY/YR 07/16/66	MESSENDER 1021	TIME GMT	BOTTOM 3587M	WIND 100	SPEED 15KT	WEATHER 1	Dominant Waves 020 06					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	20.99	34.378	5.19			387.8	0	20.99	34.378	5.19	24.044	387.8	0		
25	20.99	34.375	5.24			388.0	10	20.99	34.377	5.21	24.043	387.9	.039		
49	20.86	34.375	5.61			384.6	20	20.99	34.376	5.23	24.042	387.9	.078		
74	18.28	34.056	5.68			344.2	30	20.96	34.375	5.32	24.049	387.3	.116		
98	17.34	33.816	5.62			339.9	50	20.77	34.364	5.61	24.093	383.0	.194		
118	15.03	33.800	4.73			290.9	75	18.25	34.068	5.68	24.502	344.0	.285		
148	12.39	33.800	4.01			239.3	100	17.13	33.809	5.56	24.590	335.7	.371		
197	10.50	34.047	2.78			188.1	125	14.32	33.792	4.53	25.207	277.0	.448		
247	10.18	34.108U	1.18			150.0	127	33.807	3.96	25.632	236.6	.513			
297	9.77	34.397	.59			150.3	200	10.48	34.069	2.67	26.163	186.1	.621		
346	9.34	34.468	.67			138.3	250	10.16	34.332	1.12	26.424	161.4	.710		
395	8.51	34.499	.37			125.4	300	9.75	34.403	.59	26.548	149.5	.791		
495	7.43	34.466	.23			110.6	400	8.44	34.499	.36	26.833	122.5	.934		
594	6.58	34.458	.56			100.0	500	7.38	34.465	.25	26.965	110.0	1.058		
692	5.77	34.466	.24			89.5	600	6.53	34.458	.56	27.077	99.3	1.171		
792	5.04	34.465	.33			81.2	700	5.70	34.466	.25	27.189	88.7	1.274		
890	4.62	34.464	.40			76.8	800	5.00	34.465	.33	27.273	80.8	1.368		
990	4.23	34.484	.58			71.3	1000	4.20	34.490	.60	27.362	70.5	1.538		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

3

	LATITUDE 24 00.0N	LONGITUDE 118 39.0W	MO/DAY/YR 07/16/66	MESSENDER 1711	TIME GMT	BOTTOM 4204M	WIND 360	SPEED 12KT	WEATHER 1	Dominant Waves 010 06 07					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	21.31	34.393	5.14			395.0	0	21.31	34.393	5.14	23.968	395.0	0		
25	21.28	34.395	5.15			394.1	10	21.30	34.394	5.14	23.972	394.6	.039		
49	18.46	34.026	5.69			350.0	20	21.29	34.395	5.15	23.976	394.2	.079		
74	17.60	34.023	5.86			330.8	30	20.72	34.311	5.25	24.065	385.8	.118		
98	17.24	34.073	5.64			318.9	50	18.40	34.020	5.70	24.443	349.7	.192		
117	15.41	34.008	5.17			283.6	75	17.58	34.021	5.86	24.664	330.6	.277		
147	12.43	33.870	4.29			234.9	100	17.08	34.069	5.60	24.800	315.7	.359		
196	10.04	34.043	2.69			180.8	125	14.56	33.960	4.95	25.284	269.6	.433		
245	10.63	34.483	.88			150.0	150	12.20	33.870	4.20	25.694	230.7	.496		
294	10.09	34.559	.46			143.8	200	10.05	34.081	2.52	26.246	178.2	.601		
345	9.42	34.530	.53			134.9	250	10.60	34.501	.86	26.477	156.2	.687		
396	8.46	34.487	.41			123.6	300	10.02	34.555	.47	26.621	142.7	.764		
494	7.22	34.424	.30			110.9	400	8.37	34.482	.40	26.832	122.6	.904		
591	6.42	34.439	.61			99.4	500	7.16	34.424	.32	26.963	110.1	1.028		
688	5.80		.44			600	600	6.36	34.441	.61	27.086	98.5	1.140		
707	5.23	34.476	.21			82.5	700	5.73	34.464	.40	27.185	89.2	1.243		
885	4.73	34.489	.35			76.1	800	5.16	34.478	.22	27.265	81.6	1.338		
985	4.39	34.506	.44			71.2	1000	4.35	34.510	.27	27.381	70.5	1.509		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

5

	LATITUDE 23 00.0N	LONGITUDE 118 50.0W	MO/DAY/YR 07/16/66	MESSENDER 2352	TIME GMT	BOTTOM 3983M	WIND 360	SPEED 11KT	WEATHER 1	Dominant Waves 360 06 07					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	21.89	34.612	5.14			394.4	0	21.89	34.612	5.14	23.974	394.4	0		
24	21.69		5.13			10	21.80	34.610	5.14	23.997	392.2	.039			
48	20.04	34.224	5.46			374.8	20	21.72	34.610	5.13	24.020	390.0	.079		
73	18.94	34.227	5.57			347.5	30	21.30	34.612	5.21	24.137	378.9	.117		
97	18.32	34.244	5.46			331.5	50	19.93	34.213	5.47	24.200	372.9	.193		
115	17.69	34.273	5.31			314.7	75	18.88	34.220	5.57	24.680	346.1	.203		
145	14.30	33.917	4.55			267.4	100	18.26	34.256	5.44	24.659	329.1	.360		
196	10.80	33.990	3.09			197.3	125	16.67	34.157	5.10	24.964	300.1	.448		
242	9.68	34.240	1.85			163.0	150	15.85	33.900	6.80	25.393	299.3	.518		
292	8.98	34.287	1.33			146.2	200	10.62	34.026	2.91	26.105	191.6	.633		
340	8.54	34.361	.79			134.1	250	9.72	34.262	1.76	26.663	159.5	.723		
389	7.92	34.371	.85			124.4	300	8.90	34.301	1.22	26.607	143.9	.802		
486	7.10	34.423	.53			109.4	400	7.81	34.377	.82	26.834	122.6	.942		
586	6.34	34.423	.58			99.6	500	6.97	34.424	.53	26.990	107.6	1.084		
680	5.72	34.455	.38			89.7	600	6.23	34.420	.35	27.093	97.9	1.175		
777	5.24	34.480	.39			92.3	700	5.61	34.461	.38	27.196	88.1	1.276		
876	4.80	34.500	.43			76.0	800	5.13	34.485	.40	27.273	80.8	1.370		
974	4.38	34.511	.72			70.8	1000	4.30	34.520	.27	27.395	69.3	1.539		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

7

	LATITUDE 22 00.0N	LONGITUDE 119 02.0W	MO/DAY/YR 07/17/66	MESSINGER 0630	TIME GMT	BOTTOM 4275M	WIND 110	SPEED 1KNT	WEATHER 1	Dominant Waves 190 05 07					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	S103	DT	DD
0	22.40	34.674	5.04			403.6	0	22.40	34.674	5.04	23.878	403.6	0		
24	22.38	34.670	5.07			403.3	10	22.39	34.673	5.05	23.879	403.5	.040		
48	19.74	34.284	5.51			363.0	20	22.38	34.671	5.06	23.880	403.4	.081		
71	18.07	33.985	5.68			344.5	30	21.80	34.584	5.17	23.977	394.1	.121		
95	16.96	33.890	5.62			326.0	50	19.57	34.293	5.53	24.325	360.9	.197		
115	16.25	33.975	5.25			304.1	75	17.85	33.955	5.67	24.528	341.6	.285		
142	13.14	33.908	4.10			245.4	100	16.84	33.912	5.56	24.738	321.6	.368		
190	10.83	34.070	2.80			191.9	125	15.17	33.946	4.85	25.143	283.1	.445		
238	10.26	34.329	1.53			163.3	150	12.55	33.922	3.85	25.666	231.3	.510		
286	9.45	34.375	1.17			146.9	200	10.65	34.131	2.50	26.181	184.4	.617		
333	9.02	34.418	.84			137.1	250	10.05	34.350	1.40	26.456	158.3	.705		
381	8.43	34.438	.59			126.8	300	9.31	34.390	1.07	26.610	143.6	.783		
477	7.34	34.422	.50			112.7	400	8.20	34.436	.57	26.821	123.6	.923		
572	6.46	34.453	.45			98.9	500	7.11	34.429	.50	26.975	109.1	1.047		
669	5.82	34.460	.19			90.5	600	6.26	34.456	.37	27.111	96.1	1.158		
767	5.26	34.474	.29			83.0	700	5.63	34.466	.21	27.197	80.0	1.259		
865	4.84	34.492	.33			77.0	800	5.11	34.480	.30	27.272	80.9	1.352		
963	4.46	34.509	.53			71.7	1000	4.33	34.520		27.391	69.6	1.522		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

9

	LATITUDE 21 00.0N	LONGITUDE 119 12.0W	MO/DAY/YR 07/17/66	MESSINGER 1301	TIME GMT	BOTTOM 3248M	WIND 020	SPEED 13KT	WEATHER 1	Dominant Waves 150 05 06					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	S103	DT	DD
1	22.76	34.624	4.95			416.9	0	22.76	34.624	4.95	23.738	416.9	0		
23	22.76	34.623	4.95			617.0	10	22.76	34.624	4.95	23.738	417.0	.042		
47	21.45	34.514	5.25			389.9	20	22.76	34.624	4.95	23.737	417.0	.083		
66	20.36	34.462	5.31			365.6	30	22.44	34.594	5.03	23.805	410.6	.125		
90	19.02	34.336	5.39			341.7	50	21.30	34.508	5.26	24.058	386.4	.205		
108	18.42	34.354	5.38			325.9	75	19.91	34.415	5.36	24.360	357.6	.298		
133	16.83	34.258	4.83			296.2	100	18.69	34.364	5.38	24.619	333.0	.386		
178	12.63	34.019	3.81			227.6	125	17.42	34.299	5.06	24.896	306.5	.466		
222	10.65	34.070	3.17			188.9	150	15.22	34.142	4.43	25.283	269.7	.539		
263	9.70	34.219	1.90			162.4	200	11.45	34.025	3.51	25.955	205.8	.661		
308	8.94	34.299	1.30			146.7	250	9.94	34.172	2.30	26.335	169.7	.757		
350	8.33	34.332	.88			133.2	300	9.06	34.290	1.37	26.573	147.2	.839		
435	7.79	34.391	.42			121.1	400	7.97	34.369	.56	26.803	125.3	.982		
522	6.96	34.434	.20			106.7	500	7.17	34.425	.23	26.962	110.2	1.107		
610	6.32	34.456	.20			96.9	600	6.39	34.454	.20	27.093	97.9	1.219		
700	5.72	34.476	.21			80.2	700	5.72	34.476	.21	27.195	88.2	1.321		
792	5.18	34.489	.29			81.0	800	5.14	34.490	.26	27.277	80.4	1.415		
866	4.72	34.498	.51			75.3	1000	4.35	34.510		27.382	70.5	1.585		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

11

	LATITUDE 20 24.0N	LONGITUDE 119 18.0W	MO/DAY/YR 07/17/66	MESSINGER 1653	TIME GMT	BOTTOM 3776M	WIND 020	SPEED 18KT	WEATHER 1	Dominant Waves 360 08 06					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	S103	DT	DD
2	23.23	34.614	5.01	.01		430.5	0	23.23	34.614	5.01	23.596	430.5	0		
26	23.22	34.616	5.08	.01		430.1	10	23.23	34.615	5.04	23.597	430.4	.043		
50	22.60	34.589	5.07	.00		415.1	20	23.22	34.616	5.07	23.599	430.2	.086		
74	20.06	34.497	5.39	.00		355.5	30	23.21	34.616	5.08	23.603	429.8	.129		
97	18.57	34.361	5.19	.06		326.9	50	22.60	34.589	5.07	23.757	415.1	.214		
116	17.76	34.207	5.02	.22		315.3	75	19.98	34.491	5.39	24.399	353.9	.311		
163	15.92	34.236	4.48	.04		276.6	100	18.44	34.348	5.17	24.683	326.9	.397		
190	12.10	34.261	1.90	.00		200.1	125	17.21	34.261	4.89	24.918	304.5	.476		
238	11.04	34.436	1.10	.00		168.5	150	15.29	34.215	4.08	25.322	266.0	.549		
265	10.07	34.436	.95	.00		152.6	200	11.76	34.303	1.63	26.113	190.8	.665		
332	9.84	34.565	.25	.00		139.0	250	10.76	34.438	1.06	26.400	163.6	.756		
380	9.11	34.529	.18	.00		130.2	300	10.00	34.480	.72	26.566	147.8	.837		
476	7.76	34.480	.27	.00		114.1	400	8.81	34.515	.19	26.790	126.6	.982		
571	6.62	34.473	.16	.00		102.0	500	7.50	34.477	.24	26.957	110.7	1.108		
667	6.03	34.466	.31	.00		92.6	600	6.56	34.470	.20	27.082	99.0	1.222		
766	5.40	34.482	.26	.00		86.0	700	5.80	34.470	.29	27.181	89.5	1.325		
863	4.94	34.497	.42	.00		77.7	800	5.22	34.487	.32	27.265	81.5	1.420		
962	4.58	34.519	.28	.00		72.2	1000	4.50	34.530		27.381	70.6	1.592		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

13

LATITUDE 19 53.0N	LONGITUDE 119 28.0W	MO/DAY/YR 07/17/66	MESSENDER 2055	TIME GMT	BOTTOM 4054M	WIND 020	SPEED 15KT	WEATHER 1	DOMINANT WAVES 360 08 06				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD
0	23.37	34.684	4.99	.00	429.4	0	23.37	34.684	4.99	23.608	429.4	0	
23	23.26	34.681	5.00	.00	426.0	10	23.31	34.683	4.99	23.623	427.9	.043	
46	21.96	34.528	5.24	.00	402.3	20	23.26	34.682	5.00	23.639	426.4	.086	
68	20.35	34.458	5.35	.00	365.6	30	22.93	34.639	5.07	23.699	420.6	.128	
91	18.92	34.319	5.35	.00	340.4	50	21.67	34.514	5.27	23.961	395.7	.210	
110	17.96	34.244	5.18	.03	323.1	75	19.89	34.417	5.35	24.367	357.0	.305	
137	15.58	34.173	3.93	.02	275.2	100	18.49	34.281	5.27	24.620	332.8	.392	
183	12.52	34.424	1.33	.00	195.8	125	16.88	34.189	4.57	24.985	298.1	.671	
229	11.66	34.556	.77	.00	166.9	150	14.55	34.224	3.12	25.490	250.0	.541	
275	11.44	34.682	.14	.00	157.3	200	11.95	34.483	1.01	26.216	181.1	.651	
321	10.50	34.601	.54	.00	147.1	250	11.45	34.630	.42	26.424	161.4	.739	
367	9.69	34.549	.28	.00	137.8	300	10.98	34.649	.33	26.525	151.7	.821	
458	8.44	34.508	.20	.00	121.7	400	9.21	34.529	.25	26.736	131.7	.970	
550	7.25	34.478	.36	.00	107.3	500	7.87	34.492	.28	26.914	114.8	1.102	
641	6.38	34.470	.18	.00	96.6	600	6.76	34.472	.27	27.060	101.0	1.218	
734	5.73	34.472	.18	.00	88.6	700	5.95	34.470	.18	27.162	91.3	1.324	
828	5.21	34.486	.24	.00	81.6	800	5.35	34.481	.22	27.244	83.6	1.421	
926	4.73	34.508	.28		74.7	1000	4.66	34.520		27.377	70.9	1.595	

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

15

LATITUDE 19 29.0N	LONGITUDE 119 30.0W	MO/DAY/YR 07/18/66	MESSENDER 0049	TIME GMT	BOTTOM 4070M	WIND 020	SPEED 19KT	WEATHER 1	DOMINANT WAVES 020 08 06				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD
1	24.49	34.518	4.83	.01	472.9	0	24.49	34.518	4.83	23.152	472.9	0	
23	23.86	34.689	4.92	.01	442.7	10	24.49	34.518	4.87	23.152	472.9	.047	
45	21.36	34.510	5.33	.02	387.3	20	24.08	34.664	4.91	23.383	450.8	.094	
68	19.90	34.415	5.35	.00	357.4	30	23.10	34.565	5.05	23.596	430.5	.138	
89	19.04	34.365	5.37	.02	339.9	50	20.94	34.489	5.33	24.141	378.5	.219	
108	18.22	34.319	5.30	.02	323.7	75	19.59	34.397	5.36	24.428	351.1	.311	
135	15.51	34.065	4.13	.02	281.6	100	18.62	34.347	5.33	24.637	331.2	.397	
180	12.37	34.195	2.40	.02	209.9	125	16.98	34.152	4.63	24.981	298.5	.476	
225	11.96	34.619	.37	.02	171.2	150	14.22	34.051	3.55	25.428	255.9	.547	
271	10.98	34.624	.22	.01	153.6	200	12.19	34.429	1.40	26.129	189.3	.660	
315	10.53	34.649	.07	.00	144.1	250	11.43	34.647	.29	26.441	159.7	.750	
359	9.74	34.599	.06	.00	134.9	300	10.68	34.645	.11	26.576	146.9	.830	
450	8.43	34.533	.28	.00	119.7	400	9.12	34.565	.17	26.779	127.7	.975	
539	7.23	34.497	.07	.00	105.6	500	7.72	34.509	.16	26.950	111.4	1.102	
629	6.56	34.499	.31	.01	96.8	600	6.73	34.494	.22	27.079	99.2	1.217	
720	5.96	34.497	.00	.00	89.4	700	6.08	34.497	.33	27.166	91.0	1.321	
815	5.34	34.497	.35	.01	82.2	800	5.43	34.497	.35	27.247	83.3	1.418	
912	4.87	34.505	.41		76.4	1000	4.60	34.520		27.362	72.4	1.594	

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

17

LATITUDE 19 05.0N	LONGITUDE 119 34.0W	MO/DAY/YR 07/18/66	MESSENDER 0500	TIME GMT	BOTTOM 4006M	WIND 200	SPEED 05KT	WEATHER 5	DOMINANT WAVES 200 08 07				
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD
2	25.35	34.402	4.78	.00	506.1	0	25.35	34.402	4.78	22.805	506.1	0	
25	25.33	34.408	4.80	.00	505.1	10	25.34	34.404	4.79	22.806	505.7	.051	
53	22.56	34.555	5.10	.00	416.5	20	25.33	34.407	4.80	22.813	505.3	.101	
82	20.16	34.499	4.65	.33	357.9	30	24.93	34.380	4.87	22.916	495.4	.151	
105	17.52	34.302	4.364	.11	308.7	50	22.88	34.523	5.00	23.626	427.6	.244	
123	15.72	34.104	3.614	.12	283.2	75	20.76	34.539	4.79	24.229	370.1	.344	
152	13.66	34.222	2.16	.01	232.0	100	18.11	34.351	4.45	24.769	318.7	.431	
207	12.04	34.510	.74	.01	180.7	125	15.95	34.103	3.51	25.179	279.6	.507	
253	11.10	34.605	.59	.01	157.0	150	13.75	34.205	2.26	25.644	235.4	.572	
308	10.52	34.630	.16	.01	149.3	200	12.14	34.479	.04	26.176	184.0	.679	
356	9.74	34.580	.14	.00	136.3	250	11.15	34.603	.53	26.458	158.1	.768	
409	8.82	34.527	.26	.00	126.0	300	10.60	34.633	.21	26.581	146.4	.847	
512	7.51	34.480	.14	.00	110.6	400	8.96	34.535	.26	26.780	127.6	.991	
617	6.56	34.483	.14	.01	97.9	500	7.64	34.483	.16	26.942	112.2	1.119	
722	5.82	34.497	.13	.01	87.6	600	6.69	34.481	.16	27.073	99.8	1.234	
830	5.20	34.511	.33	.01	79.6	700	5.96	34.494	.13	27.179	89.7	1.338	
937	4.67	34.519	.38	.01	73.2	800	5.36	34.508	.27	27.264	81.6	1.433	
1047	4.23	34.504	.57	.01	68.5	1000	4.40	34.533	.47	27.394	69.4	1.604	

A) OXYGEN SAMPLES AT 105 AND 123 METERS APPEAR TO HAVE BEEN REVERSED. THEY ARE ASSUMED TO BE IN THE CORRECT ORDER.

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

19

	LATITUDE 10 39.0N	LONGITUDE 119 37.0W	MO/DAY/YR 07/18/66	MESSINGER 0851	TIME GMT	BOTTOM	WIND 020	SPEED 13KT	WEATHER 5	DOMINANT WAVES 200 08 09					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	25.86	34.396	4.74		.00	521.5	0	25.86	34.396	4.74	22.643	521.5	0		
24	25.88	34.399	4.70		.00	521.9	10	25.87	34.397	4.72	22.642	521.7	.052		
52	22.84	34.500	5.20		.00	428.1	20	25.88	34.399	4.71	22.640	521.8	.104		
81	21.02	34.459	5.17		.01	382.7	30	25.31	34.417	4.80	22.827	504.0	.156		
105	18.56	34.255	4.41		.33	336.4	50	23.09	34.491	5.16	23.542	435.6	.250		
124	16.42	34.203	3.09		.18	291.2	75	21.39	34.487	5.18	24.016	390.4	.354		
158	13.47	34.187	2.44		.02	231.2	100	19.12	34.296	4.64	24.473	346.9	.447		
210	11.80	34.589	.59		.01	170.5	125	16.31	34.200	3.06	25.080	289.1	.527		
250	11.28	34.670	.51		.01	155.4	150	14.05	34.176	2.51	25.560	243.4	.595		
315	10.28	34.603	.19		.00	143.3	200	11.94	34.509	.91	26.238	179.0	.703		
363	9.52	34.356	.46		.00	134.6	250	11.34	34.672	.52	26.476	156.4	.789		
420	8.74	34.518	.98		.00	125.4	300	10.56	34.629	.25	26.584	146.1	.868		
525	7.50	34.494	.36		.00	109.5	400	9.00	34.529	.56	26.769	128.5	1.013		
631	6.40	34.481	.20		.00	96.0	500	7.78	34.497	.44	26.932	113.1	1.142		
736	5.68	34.492	.25		.01	86.5	600	6.69	34.483	.23	27.074	99.6	1.257		
843	5.10	34.498	.41		.01	79.4	700	5.90	34.488	.23	27.182	89.4	1.360		
951	4.64	34.515	.64		.01	73.2	800	5.32	34.495	.36	27.260	82.1	1.456		
1060	4.20	34.531	.54		.01	67.4	1000	4.44	34.522	.60	27.381	70.5	1.628		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

21

	LATITUDE 10 15.0N	LONGITUDE 119 40.0W	MO/DAY/YR 07/18/66	MESSINGER 1257	TIME GMT	BOTTOM 4287M	WIND 150	SPEED 19KT	WEATHER 0	DOMINANT WAVES 140 07 07					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	25.84	34.406	4.75		.05	520.2	0	25.84	34.406	4.75	22.657	520.2	0		
25	24.70	34.383	4.90		.01	488.6	10	25.84	34.426	4.82	22.672	518.8	.052		
55	22.25	34.482	4.94		.05	413.4	20	25.16	34.398	4.88	22.860	500.8	.103		
85	19.30	34.502	4.98		.08	336.3	30	24.32	34.395	4.91	23.111	476.0	.152		
110	16.22	34.269	2.94		.05	282.0	50	22.68	34.460	4.94	23.636	426.7	.243		
130	13.54	34.185	2.37		.03	232.7	75	20.36	34.519	4.97	24.320	361.4	.342		
165	12.12	34.330	1.50		.00	195.4	100	17.50	34.366	3.78	24.927	303.6	.426		
221	11.92	34.636A	.29		.01	162.1	125	14.16	34.193	2.47	25.590	244.3	.495		
271	10.70	34.633	.18		.01	148.1	150	12.42	34.250	1.86	25.945	206.8	.552		
331	9.68	34.586	.14		.00	134.9	200	11.64	34.537	.66	26.316	171.6	.649		
382	8.94	34.543	.15		.01	126.6	250	11.06	34.652	.23	26.512	152.9	.733		
441	8.06	34.508	.17		.01	116.2	300	10.20	34.614	.15	26.635	141.3	.809		
552	7.12	34.519	.13		.01	102.5	400	8.66	34.530	.16	26.824	123.4	.949		
661	6.22	34.506	.34		.01	91.9	500	7.50	34.510	.14	26.983	108.3	1.073		
770	5.51	34.514	.24		.02	82.9	600	6.71	34.513	.23	27.096	97.6	1.184		
880	4.94	34.522	.28		.02	75.9	700	5.95	34.508	.31	27.192	88.5	1.286		
990	4.53	34.533	.44		.03	70.7	800	5.34	34.516	.25	27.273	80.8	1.381		
1101	4.11	34.545	.62		.01	65.5	1000	4.49	34.534	.46	27.385	70.2	1.551		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

23

	LATITUDE 17 40.0N	LONGITUDE 119 46.0W	MO/DAY/YR 07/18/66	MESSINGER 1745	TIME GMT	BOTTOM 3966M	WIND 180	SPEED 14KT	WEATHER 1	DOMINANT WAVES 160 08 08					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	25.92	34.349	4.70		.02	526.7	0	25.92	34.349	4.70	22.589	526.7	0		
24	25.30	34.408	4.87		.00	506.5	10	25.92	34.349	4.78	22.589	526.7	.053		
47	24.33	34.511	4.93		.01	476.0	20	25.57	34.390	4.85	22.728	513.4	.105		
71	22.02	34.493	4.91		.06	406.5	30	25.17	34.412	4.89	22.867	500.1	.156		
94	18.60	34.425	5.03		.39	325.0	50	24.11	34.425	4.93	23.195	468.8	.253		
118	15.62	34.208	3.35		.03	273.5	75	21.45	34.488	4.93	24.003	391.7	.361		
142	13.68	34.220	2.21		.01	232.9	100	17.78	34.366	4.67	24.860	310.0	.449		
166	12.54	34.379	1.28		.00	199.5	125	14.96	34.193	2.98	25.378	260.7	.522		
190	11.86	34.523	.73		.00	176.5	150	13.23	34.266	1.87	25.798	220.8	.583		
214	11.47	34.514	.33		.00	162.8	200	11.68	34.570	.54	26.333	169.9	.683		
238	11.02	34.628	.20		.01	156.0	250	10.84	34.634	.17	26.530	150.5	.765		
262	10.66	34.636	.15		.00	147.6	300	10.19	34.619	.15	26.641	140.7	.841		
286	10.32	34.624	.16		.02	142.4	400	8.56	34.544	.17	26.851	120.8	.979		
310	10.08	34.612	.14		.00	139.4	500	7.37	34.518	.14	27.008	105.9	1.100		
334	9.59	34.580	.15		.00	133.9	600	6.51	34.509	.14	27.121	95.2	1.209		
358	9.17	34.564	.16		.01	128.5	700	5.79	34.512	.16	27.216	86.2	1.309		
381	34.547	.17			.02										
478	34.543	.19			.01										
575	6.72	34.510	.13		.01										
770	5.42	34.517	.18		.00										

A) AN ERROR OF -.01 DHMS HAS BEEN ASSUMED.

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

64

	LATITUDE 20 32.0N	LONGITUDE 119 44.0W	MO/DAY/YR 07/20/66	MESSENDER 1929	TIME GMT	BOTTOM 3874M	WIND 330	SPEED 05KT	WEATHER 1	DOMINANT WAVES 330 02 05					
Z	T	S	02	PD4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
2	23.75	34.557	4.92			449.1	0	23.75	34.557	4.92	23.401	449.1		0	
25	23.26	34.555	4.97			435.6	10	23.58	34.550	4.93	23.445	444.9	.045		
49	22.73	34.612	5.07			417.0	20	23.37	34.551	4.96	23.508	438.9	.089		
72	20.80	34.522	5.27			372.5	30	23.21	34.573	4.98	23.569	433.1	.133		
96	19.43	34.440	5.27			344.0	50	22.65	34.610	5.08	23.757	415.1	.218		
120	18.30	34.357	5.11			322.8	75	20.60	34.512	5.27	24.249	368.2	.316		
149	16.62	34.323	4.67			286.8	100	19.24	34.425	5.26	24.540	340.5	.406		
195	12.48	34.225	2.01			209.7	125	18.05	34.351	5.08	24.783	317.6	.489		
244	10.96	34.377	1.32			171.4	150	16.53	34.319	4.61	25.122	285.1	.565		
294	10.62	34.563	.46			151.9	200	12.23	34.236	1.89	25.971	204.3	.690		
342	9.06	34.398	.77			139.2	250	10.92	34.409	1.19	26.349	168.4	.786		
388	7.92	34.314	.80			128.7	300	10.45	34.549	.48	26.542	150.1	.869		
486	7.14	34.391	.32			112.3	400	7.76	34.315	.75	26.792	126.4	1.013		
579	6.62	34.474	.18			99.3	500	7.06	34.406	.28	26.964	110.1	1.139		
673	5.96	34.482	.20			90.6	600	6.47	34.479	.18	27.101	97.1	1.251		
772	5.36	34.487	.26			83.2	700	5.79	34.483	.22	27.193	88.4	1.353		
869	4.89	34.507	.28			76.5	800	5.21	34.492	.26	27.270	81.1	1.447		
972	4.49	34.522	.38			71.1	1000	4.40	34.530		27.392	69.5	1.617		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

207

	LATITUDE 30 01.0N	LONGITUDE 117 54.0W	MO/DAY/YR 07/26/66	MESSENDER 2006	TIME GMT	BOTTOM 3304M	WIND 280	SPEED 04KT	WEATHER 1	DOMINANT WAVES 280 03 07					
Z	T	S	02	PD4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	18.26	33.428	5.50			389.4	0	18.26	33.428	5.50	24.026	389.4	0		
25	17.56	33.430	5.58			372.6	10	18.09	33.436	5.53	24.074	386.9	.039		
49	15.94	33.399	5.96			339.4	20	17.76	33.434	5.56	24.152	377.4	.077		
74	14.80	33.357	6.00			318.6	30	17.22	33.425	5.66	24.274	365.9	.114		
99	14.30	33.408	5.90			304.7	50	15.88	33.397	5.94	24.562	338.4	.185		
124	12.63	33.415	5.27			272.0	75	14.79	33.359	6.00	24.775	318.1	.267		
153	10.74	33.614	4.48			224.0	100	14.24	33.408	5.88	24.926	303.7	.346		
203	9.58	33.889	3.64			184.9	125	12.56	33.421	5.24	25.277	270.3	.418		
252	8.31	33.999	3.36			157.7	150	10.91	33.589	4.56	25.713	228.8	.481		
307	7.59	34.057	2.24			143.2	200	9.61	33.878	3.67	26.161	186.3	.587		
356	7.10	34.129	.94			131.3	250	8.36	33.997	3.35	26.453	158.5	.675		
406	6.74	34.190	.37			122.1	300	7.66	34.052	2.41	26.601	144.6	.753		
510	5.99	34.276	.38			106.3	400	6.78	34.184	.41	26.827	123.1	.893		
606	5.52	34.339	.25			96.1	500	6.06	34.269	.38	26.990	107.6	1.014		
703	5.04	34.397	.27			86.3	600	5.55	34.336	.26	27.106	96.7	1.123		
806	4.62	34.429	.34			79.4	700	5.05	34.396	.27	27.212	86.6	1.223		
905	4.28	34.457	.48			73.8	800	4.64	34.428	.33	27.284	79.8	1.314		
1010	3.95	34.480	.56			68.8	1000	3.98	34.478	.56	27.395	69.2	1.481		

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

211

	LATITUDE 32 06.0N	LONGITUDE 117 31.0W	MO/DAY/YR 08/02/66	MESSENDER 0210	TIME GMT	BOTTOM 1429M	WIND 050	SPEED 08KT	WEATHER 1	DOMINANT WAVES 330 03 06					
Z	T	S	02	PD4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	20.24	33.652				421.3	0	20.24	33.652	23.693	421.3	0			
25	17.40	33.521				362.8	10	19.24	33.612	23.922	399.4	.041			
49	13.64	33.369				294.6	20	18.06	33.554	24.172	375.5	.080			
74	12.04	33.439				259.5	30	16.57	33.474	24.465	347.7	.116			
99	10.74	33.643				221.9	50	13.55	33.370	25.040	292.8	.180			
148	9.72	33.881				187.7	75	11.98	33.447	25.407	257.9	.250			
198	8.90	34.037				163.5	100	10.71	33.650	25.797	220.9	.310			
298	7.40	34.120				136.0	125	10.06	33.790	26.018	199.9	.363			
398	6.56	34.178				120.7	150	9.68	33.889	26.158	186.6	.412			
498	6.42	34.325				107.9	200	8.87	34.040	26.409	162.8	.501			
598	5.84	34.348				99.2	250	8.07	34.100	26.578	146.7	.581			
						300		7.38	34.121	26.695	135.6	.653			
						400		6.56	34.181	26.855	120.4	.787			
						500		6.41	34.326	26.988	107.8	.907			
						600		5.82	34.350	27.083	98.8	1.018			

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

217

LATITUDE 31 05.0N		LONGITUDE 118 00.0W		MO/DAY/YR 08/02/66		MESSENGER 1200		TIME GMT		BOTTOM 1669M		WIND 320 09KT		WEATHER 1		DOMINANT WAVES 320 03 07	
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD		
0	18.63	33.594				386.1	0	18.63	33.594		24.061	386.1	0				
25	16.84	33.523				350.0	10	17.84	33.561		24.231	370.0	.038				
50	15.68	33.474				328.4	20	17.15	33.535		24.376	356.1	.074				
75	12.25	33.415				265.1	30	16.67	33.517		24.474	346.8	.109				
100	11.26	33.546				217.9	50	15.68	33.474		24.667	328.4	.177				
150	9.01	33.934				172.8	75	12.25	33.415		25.332	265.1	.252				
200	8.52	34.030				158.4	100	11.26	33.546		25.618	237.9	.315				
300	7.18	34.117				133.2	125	10.05	33.744		25.984	203.1	.371				
400	6.76	34.259				117.2	150	9.01	33.934		26.303	172.8	.418				
500	6.05	34.313				104.3	200	8.52	34.030		26.455	158.4	.503				
601	5.57	34.355				95.5	250	7.82	34.077		26.597	144.9	.581				
							300	7.18	34.117		26.720	133.2	.652				
							400	6.76	34.259		26.889	117.2	.783				
							500	6.05	34.313		27.025	104.3	.900				
							600	5.57	34.355		27.118	95.5	1.007				

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

265

LATITUDE 30 01.5N		LONGITUDE 118 22.0W		MO/DAY/YR 08/04/66		MESSENGER 1215		TIME GMT		BOTTOM 3395M		WIND 290 10KT		WEATHER 1		DOMINANT WAVES 300 05 07	
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD		
0	18.34	33.409				392.7	0	18.34	33.409		23.992	392.7	0				
24	17.97	33.393A				385.2	10	18.17	33.385		24.015	390.5	.039				
48	17.72	33.525				369.8	20	18.02	33.386		24.052	387.0	.078				
72	16.84	33.352				319.8	30	17.91	33.399		24.090	383.4	.117				
95	13.82	33.389				296.6	50	17.49	33.510		24.274	365.8	.192				
143	10.22	33.638				213.7	75	14.67	33.352		24.793	316.4	.278				
191	9.18	33.889				178.7	100	13.43	33.405		25.092	287.9	.354				
287	8.04	34.058				149.4	125	11.54	33.519		25.546	244.7	.421				
384	6.87	34.136				127.8	150	9.98	33.681		25.946	206.7	.478				
483	6.03	34.235				109.9	200	9.05	33.917		26.283	174.7	.575				
583	5.50	34.297				99.0	250	8.41	34.026		26.469	157.0	.660				
							300	7.87	34.071		26.584	146.2	.738				
							400	6.71	34.153		26.812	124.5	.879				
							500	5.92	34.269		26.991	107.5	1.001				

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

266

LATITUDE 30 01.5N		LONGITUDE 118 22.0W		MO/DAY/YR 08/04/66		MESSENGER 2248		TIME GMT		BOTTOM 310		WIND 12KT		WEATHER 1		DOMINANT WAVES 300 08 07	
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD		
0	18.48	33.410	5.62		.01	395.9	0	18.48	33.410	5.62	23.958	395.9	0				
20	16.00	33.423	5.48		.00	383.7	10	18.24	33.420	5.55	24.025	389.6	.039				
30	16.20	33.562	5.63		.00	378.3	20	18.00	33.423	5.48	24.086	385.7	.078				
39	16.18	33.606	5.49		.00	376.6	30	18.20	33.562	5.63	24.143	378.3	.116				
49	16.91	33.481	5.94		.00	356.7	50	16.85	33.497	5.94	24.416	352.3	.189				
59	16.42	33.630	5.93		.00	333.0	75	15.20	33.468	5.94	24.769	318.7	.274				
69	15.44	33.503	6.06		.00	321.2	100	15.59	33.401	5.74	25.056	291.3	.351				
79	15.06	33.451	5.85		.00	317.0	125	12.04	33.431	5.51	25.383	260.2	.420				
89	14.32	33.407	5.84		.00	305.2	150	10.78	33.561	4.90	25.714	228.7	.482				
99	13.66	33.401	5.75		.01	292.6	200	9.16	33.929	4.21	26.275	175.5	.585				
123	12.19	33.424	5.53		.12	262.6	250	8.38	34.017	3.26	26.469	157.1	.670				
148	10.89	33.544	5.01		.03	231.7	300	7.74	34.080	2.66	26.611	143.6	.748				
173	9.72	33.762	3.82		.00	196.5											
197	9.22	33.914	4.22		.00	177.5											
223	8.74	34.004	4.14		.02	163.6											
247	8.40	34.013	3.38		.00	157.9											
272	8.08	34.047	2.51		.00	150.8											
297	7.76	34.073	2.15		.00	144.4											

A) AN ERROR OF .01 DHMS HAS BEEN ASSUMED.

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

273

	LATITUDE 30 27.0N	LONGITUDE 117 44.0W	MO/DAY/YR 08/06/66	MESSINGER 2330	TIME GMT	BOTTOM 2819M	WIND 260	SPEED 05KT	WEATHER 1	DOMINANT WAVES 080 06 07					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	19.10	33.474	5.46					406.1	0	19.10	33.474	5.46	23.052	406.1	0
25	17.44	33.377	5.64					374.2	10	18.43	33.418	5.55	23.976	394.3	.040
49	15.86	33.420	5.70					336.2	20	17.77	33.385	5.61	24.113	381.2	.079
74	13.36	33.267	6.05					296.7	30	17.14	33.390	5.65	24.266	366.6	.116
98	12.06	33.382	5.35					266.1	50	15.76	33.413	5.72	24.602	334.5	.107
148	9.84	33.730	3.87					200.2	75	13.29	33.270	6.03	25.015	295.2	.266
197	8.88	33.971	3.85					168.1	100	11.95	33.396	5.28	25.373	261.2	.336
248	8.15	34.026	2.91					153.4	125	10.74	33.571	4.46	25.730	227.3	.398
295	7.46	34.077	2.07					140.0	150	9.79	33.751	3.87	26.033	198.4	.451
346	7.00	34.127	1.39					130.1	200	8.83	33.977	3.81	26.364	167.0	.545
396	6.63	34.182	.90					121.3	250	8.12	34.028	2.87	26.514	152.7	.626
445	6.25	34.246	.50					111.6	300	7.41	34.082	1.99	26.660	138.9	.702
495	6.00	34.289	.35					105.5	400	6.58	34.190	.84	26.859	120.0	.836
									500	5.98	34.290		27.016	105.2	.955

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

277

	LATITUDE 30 46.0N	LONGITUDE 117 04.0W	MO/DAY/YR 08/07/66	MESSINGER 0601	TIME GMT	BOTTOM 2098M	WIND 310	SPEED 03KT	WEATHER 1	DOMINANT WAVES 02 08					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
1	19.72	33.552	5.53					417.9	0	19.72	33.552	5.53	23.728	417.9	0
26	17.08	33.41	5.72					363.6	10	18.76	33.48	5.58	23.941	397.6	.041
51	14.48	33.30	6.08					316.2	20	17.71	33.44	5.66	24.167	376.0	.080
76	12.06	33.31	6.04					269.4	30	16.66	33.39	5.79	24.379	355.8	.116
101	11.38	33.64	4.91					247.8	50	14.58	33.30	6.07	24.775	318.1	.184
150	10.06	33.72	4.22					205.0	75	12.14	33.31	6.04	25.270	271.0	.258
200	9.16	34.00	2.82					170.2	100	11.39	33.43	4.96	25.507	248.4	.323
250	8.56	34.12	2.04					152.3	125	10.71	33.58	4.59	25.739	226.4	.383
300	7.72	34.11	1.80					141.1	150	10.06	33.72	4.22	25.964	205.0	.438
350	7.26	34.16	1.23					131.1	200	9.16	34.00	2.82	26.331	170.2	.533
401	6.84	34.21	.79					121.9	250	8.56	34.12	2.04	26.519	152.3	.616
450	6.55	34.24	.57					115.9	300	7.72	34.11	1.80	26.837	141.1	.692
499	6.23	34.28	.45					108.9	400	6.85	34.21	.80	26.838	122.0	.829
									500	6.23	34.28		26.976	108.9	.951

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

354

	LATITUDE 30 57.0N	LONGITUDE 116 38.5W	MO/DAY/YR 08/10/66	MESSINGER 0550	TIME GMT	BOTTOM 685M	WIND 310	SPEED 06KT	WEATHER 1	DOMINANT WAVES 300 03 07					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	20.52	33.592	5.29					432.7	0	20.52	33.592	5.29	23.573	432.7	0
23	17.89	33.488	5.61					376.4	10	19.53	33.564	5.40	23.811	410.0	.042
44	14.42	33.395	6.11					312.5	20	18.30	33.509	5.55	24.077	384.6	.082
66	12.36	33.326	5.51					273.6	30	16.71	33.425	5.82	24.395	354.3	.119
88	11.02	33.404	4.61					238.4	50	13.74	33.319	6.02	24.962	300.3	.185
130	10.66	33.901	2.97					201.5	75	11.72	33.379	5.16	25.403	258.3	.255
173	9.89	34.041	2.55					170.6	100	10.92	33.641	4.07	25.753	225.1	.316
215	9.84	34.211	1.84					165.2	125	10.70	33.871	3.19	25.970	204.5	.370
256	9.50	34.271	1.35					155.4	150	10.28	33.982	2.71	26.129	189.3	.420
299	9.08	34.295	1.11					147.1	200	9.86	34.160	2.10	26.340	169.3	.511
342	8.46	34.278	1.07					139.1	250	9.56	34.267	1.41	26.473	156.6	.595
387	8.13	34.319	.76					131.3	300	9.07	34.295	1.11	26.576	146.9	.674
435	7.06	34.297	.56					121.2	400	7.91	34.312	.69	26.767	120.7	.818
									500	6.78	34.280		26.903	115.9	.928

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

364

	LATITUDE 30 57.0N	LONGITUDE 116 38.5W	MO/DAY/YR 08/10/66	MESSINGER 1156	TIME GMT	BOTTOM 741M	WIND 310	SPEED 06KT	WEATHER 1	DOMINANT WAVES 300 03 07					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	20.21	33.617	5.34					423.1	0	20.21	33.617	5.34	23.674	423.1	0
24	16.66	33.438	5.89					352.2	10	18.70	33.536	5.61	24.000	391.9	.041
48	13.40	33.301	6.11					290.9	20	17.23	33.465	5.82	24.302	363.1	.079
71	11.79	33.362	5.20					260.7	30	15.76	33.389	5.95	24.584	336.2	.114
94	10.71	33.564	4.39					227.2	50	13.22	33.301	6.05	25.054	291.5	.177
142	10.30	33.974	2.84					190.2	75	11.54	33.393	5.05	25.443	254.5	.245
189	9.81	34.125	2.24					171.1	100	10.66	33.639	4.17	25.797	220.9	.305
237	9.34	34.292	1.48					154.3	125	10.45	33.877	3.32	26.019	199.7	.358
284	8.48	34.181	1.70					146.6	150	10.22	34.010	2.71	26.162	186.2	.407
332	7.70	34.163	1.62					130.3	200	9.72	34.165	2.03	26.367	166.7	.497
381	7.60	34.209	1.09					122.1	250	9.12	34.240	1.51	26.525	151.7	.579
431	7.02	34.203	.89					124.7	300	8.18	34.181	1.67	26.609	143.8	.656
482	6.82	34.278	.70					116.5	400	7.39	34.206	.99	26.761	129.4	.798
									500	6.78	34.280		26.903	115.9	.928

RV THOMAS WASHINGTON

EXJIBIA EXPEDITION

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Z	T	S	O2	PO4	SiO3	NO2	NO3	DT	EXJIBIA EXPEDITION							
									MESSENGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES	
									1021M	330	07KT	1	300	02	07	
0	20.2	33.62						422.6	0	20.20	33.620		23.679	422.6		0
38	15.77	33.372						337.7	10	19.12	33.564		23.915	400.1	.041	
48	14.46	33.301						315.8	20	17.98	33.499		24.150	377.7	.080	
58	13.78	33.303						302.1	30	16.77	33.430		24.383	355.4	.117	
67	11.69	33.384						257.3	50	14.30	33.299		24.831	312.7	.184	
97	11.46	33.384						253.3	75	12.44	33.349		25.245	273.4	.258	
106	11.24	33.452						246.5	100	11.39	33.403		25.483	250.7	.324	
136	9.98	33.731						202.9	125	10.31	33.611		25.035	217.3	.383	
146	10.24	33.871						196.8	150	10.12	33.894		26.089	193.1	.435	
155	9.90	33.910						188.4	200	9.23	34.056		26.362	167.2	.526	
185	9.50	34.002						175.3	250	8.73	34.128		26.498	154.3	.609	
194	9.29	34.042						169.1	300	8.13	34.159		26.615	143.1	.686	
205	9.21	34.064						166.2	400	6.82	34.174		26.813	124.4	.825	
235	9.07	34.116						160.2	500	5.60	34.170		26.968	109.7	.948	
245	8.84	34.124						156.2								
254	8.65	34.130						152.9								
294	8.23	34.160						144.5								
343	7.38	34.148						133.6								
403	6.80	34.175						124.0								

A) MEAN VALUE OF 9.84 AND 9.95 DEGREES.

SPHERES II, MAI HAI (KANI) Expedition

The SPHERES II hydrographic data were collected in conjunction with a study in which taut-wire moorings were established to measure the rate of calcium carbonate dissolution at various depths in the water column. SPHERES II was sponsored by the Office of Naval Research and the National Science Foundation.

The MAI HAI data were collected on the final leg of the KANI Expedition, from Honolulu to San Diego, as a further study of the abyssal characteristics and circulation of the North Pacific Ocean. The Expedition was sponsored by the Office of Naval Research and the Marine Research Committee.

These Nansen bottle casts were made to study principally the deep and near-bottom region. Hence, the observations in the upper layers are more widely spaced than usual. Temperature interpolations in the upper layers have been made with the aid of the mechanical bathythermograph which extended to 250m depth. Salinity and oxygen interpolations were done in normal fashion by the computer but because of the wider-than-usual spacing of observed depths in the upper layers, the values are slightly less valid than usual.

Scientific personnel participating in the data collection were:

Peterson, Dr. M. N. A. (in charge)^{1/}
Hester, A. W.^{2/} (in charge, 8 Sept.-1 Oct.)^{2/}
Arsenault, R.^{2/}
Mauck, W. W.^{3/}
Rosendahl, D. V.^{3/}
Wirth, D.^{1/}

Papers resulting from SPHERES II Expedition data:

Berger, Wolfgang H., 1967. Foraminiferal ooze: solution at depths.
Science, 156: 383-385.

Berger, Wolfgang H., 1968. Radiolarian skeletons: solution at depths.
Science, 159: 1237-1239.

1/ 31 Aug.-8 Sept. 1966

2/ 31 Aug.-1 Oct. 1966

3/ 9 Sept.-1 Oct. 1966

Berger, Wolfgang H., 1970. Planktonic Foraminifera: selective solution and lysocline. *Mar. Geol.*, 8: 111-138.

Lynn, Ronald J., and Joseph L. Reid, Jr., 1968. Characteristics and circulation of deep and abyssal waters. *Deep-Sea Res.*, 15: 577-598.

Peterson, M. N. A., 1966. Calcite: rates of dissolution in a vertical profile in the central Pacific. *Science*, 154: 1542-1544.

Papers resulting from MAI HAI Expedition data are:

Mantyla, Arnold W., in press. On the potential temperature in the abyssal Pacific ocean. *J. Mar. Res.*

Reid, Joseph L., Jr., and Ronald J. Lynn, 1971. On the influence of the Norwegian-Greenland and Weddell seas upon the bottom waters of the Indian and Pacific oceans. *Deep-Sea Res.*, 18: 1063-1088.

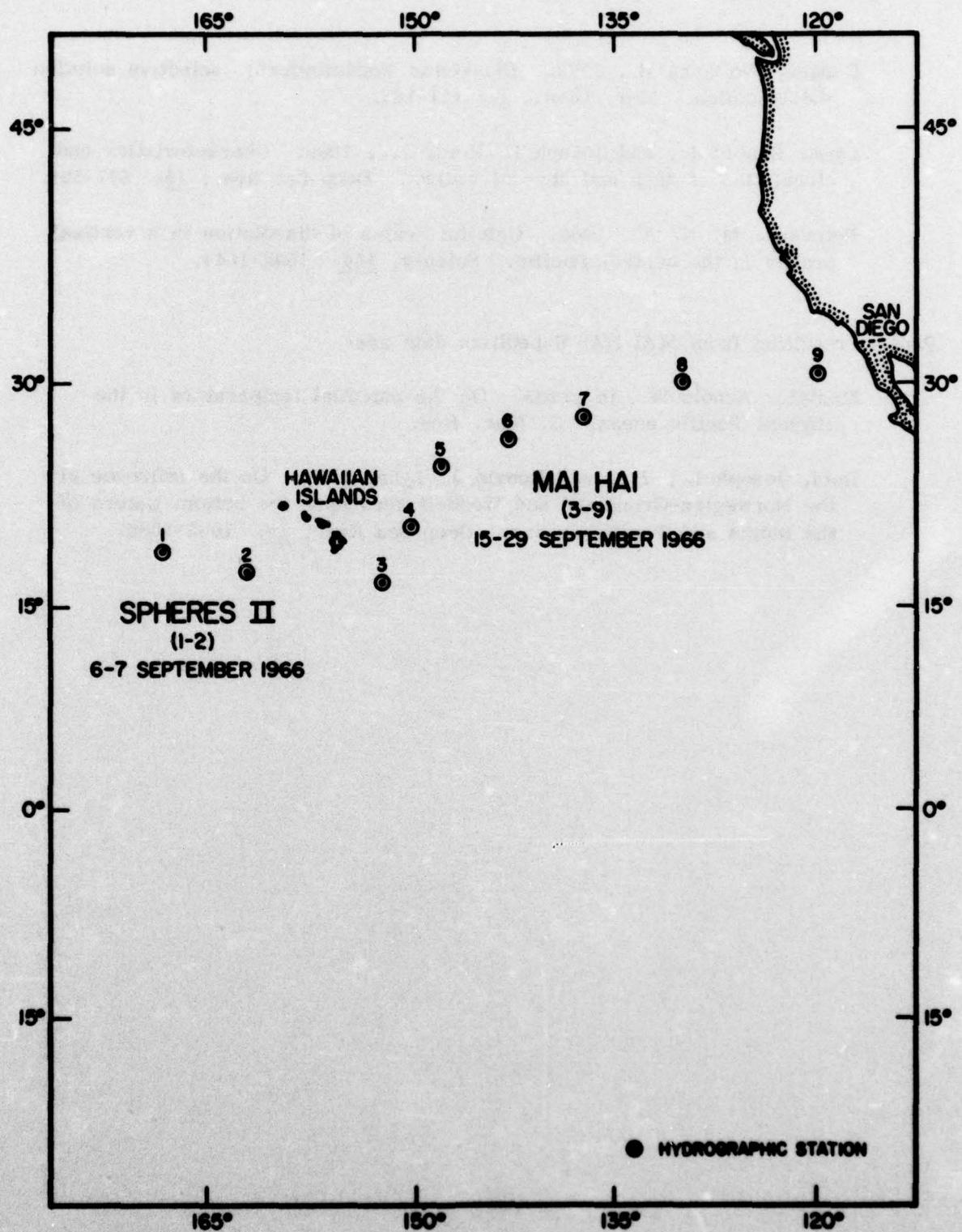


FIGURE 2

RV HORIZON											SPHERES EXPEDITION II									1			
LATITUDE			LONGITUDE			MO/DAY/YR		MESSENGER TIME			BOTTOM		WIND		SPEED		WEATHER		DOMINANT WAVES			1	
18 49.5N	168 31.0W	09/06/66	0037	0349GNT	5020M	060	08KT	1	2	3	4	5	6	7	8	9	10	11	12				
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD								
0	27.82	34.943	4.6					541.7	0	27.82	34.943	4.6	22.432	541.7	0								
30	27.76	34.933	4.63					540.6	10	27.80	34.940	4.61	22.436	541.3	.054								
49	27.72	34.947	4.75					538.3	20	27.78	34.936	4.62	22.440	541.0	.108								
74	26.21	34.945	4.95					492.4	30	27.76	34.933	4.63	22.444	540.6	.163								
98		35.029	4.89					50	27.72	34.946	4.76	22.447	538.4	.271									
196	18.65	34.893	4.28					292.2	75	26.16	34.948	4.95	22.967	490.5	.400								
294	12.62	34.342	4.3					203.7	100	24.80	35.030	4.88	23.446	446.9	.518								
391	8.73	34.196	2.45					149.2	125	23.30	35.030	4.72	23.890	402.4	.625								
490	7.02	34.254	1.27					120.9	150	22.20	35.020	4.56	24.197	373.2	.723								
686	5.59	34.414	.86					91.3	200	18.37	34.872	4.28	25.100	287.1	.891								
884	4.77	34.489	1.05					76.5	250	15.19	34.580	4.39	25.625	237.2	1.026								
1081	4.12	34.530	1.33					66.7	300	12.31	34.321	4.21	26.021	199.5	1.139								
1278	3.55	34.559	1.50					59.0	400	9.51	34.198	2.31	26.587	145.8	1.319								
1472	3.01	34.579	1.83					52.7	500	6.91	34.263	1.25	26.872	110.8	1.459								
1669	2.57	34.605	1.92					47.0	600	6.02	34.349	1.04	27.050	101.2	1.576								
1865	2.20	34.621	2.17					43.5	700	5.52	34.422	.86	27.177	89.9	1.680								
2065A	2.13	34.631	2.33					41.5	800	5.07	34.465	.93	27.265	81.5	1.775								
2138B	2.08	34.635	2.37					40.9	1000	4.37	34.516	1.22	27.384	70.3	1.946								
2261A	1.98	34.643						39.5	1200	3.77	34.549	1.43	27.473	61.9	2.098								
2433B	1.85	34.652	2.52					37.9	1500	2.94	34.584	1.85	27.580	51.8	2.299								
2457A	1.84	34.653	2.59					37.7	2000	2.17	34.629	2.29	27.682	42.1	2.583								
2653A	1.76	34.659	2.71					36.7	2500	1.83	34.655	2.64	27.730	37.5	2.831								
2728B	1.71	34.662	2.85					36.1	3000	1.64	34.670	2.95	27.756	35.0	3.063								
3022B	1.64	34.670	2.96					35.0	3500	1.53	34.684	3.21	27.775	33.2	3.289								
3218B	1.58	34.676	3.07					34.1	4000	1.51	34.688	3.44	27.781	32.7	3.513								
3414B	1.54	34.679	3.16					33.6	4500	1.49	34.694	3.65	27.787	32.1	3.740								
3559B	1.53	34.686						33.0	5000	1.38	34.701	4.11	27.800	30.8	3.965								
3707B	1.50	34.683	3.35					33.0															
3805B	1.49	34.685	3.44					32.8															
3904B	1.49	34.685	3.40					32.8															
4002B	1.51	34.688	3.44					32.7															
4099B	1.49	34.689	3.47					32.5															
4197B	1.50	34.688	3.52					32.6															
4295B	1.49	34.689	3.53					32.5															
4394B	1.50	34.689	3.61					32.6															
4492B	1.49	34.694	3.64					32.1															
4589B	1.49	34.692	3.72					32.3															
4787B	1.46	34.694	3.91					31.9															
4973B	1.39	34.703	4.17					30.8															
4983B	1.38	34.701	4.11					30.8															

RV HORIZON											SPHERES EXPEDITION II									2			
LATITUDE			LONGITUDE			MO/DAY/YR		MESSENGER TIME			BOTTOM		WIND		SPEED		WEATHER		DOMINANT WAVES			2	
17 03.5N	162 24.0W	09/07/66	1606	1900GNT	5726M	060	14KT	1	2	3	4	5	6	7	8	9	10	06	0				
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD								
0	27.2	35.003						518.2	0	27.2	35.003		22.677	518.2	0								
48	27.16	34.990	4.67					518.0	10	27.19	35.000		22.678	518.2	.052								
97	24.00	35.075	4.94					418.8	20	27.18	34.997		22.679	518.1	.104								
145	21.41	35.081	4.65					347.8	30	27.18	34.995		22.679	518.1	.156								
193	18.66	34.903	4.24					291.7	50	27.13	34.990	4.68	22.690	517.0	.259								
291	11.24	34.200	3.72					189.3	75	25.58	35.040	4.90	23.215	466.9	.383								
309	8.30	34.174	2.9					144.5	100	23.82	35.080	4.93	23.775	413.4	.494								
487	6.86	34.256	1.32					116.1	125	22.43	35.098	4.81	24.192	373.7	.593								
683	5.56	34.546	1.01					88.5	150	21.17	35.076	4.60	24.524	342.0	.684								
879	4.60	34.504	1.14					73.6	200	18.10	34.850	4.21	25.151	282.3	.843								
1077	3.88	34.534	1.18					66.0	250	14.22	34.440	3.95	25.727	227.5	.974								
1272	3.25	34.562						56.1	300	10.82	34.182	3.63	26.190	185.5	1.080								
1466	2.82	34.587	1.67					50.4	400	8.07	34.181	2.35	26.642	140.7	1.249								
1661	2.49	34.61	1.88					46.0	500	6.54	34.271	1.30	26.928	113.5	1.383								
1858	2.25	34.623	2.09					43.1	600	5.84	34.376	1.14	27.101	97.1	1.496								
2053	2.01	34.642	2.41					39.8	700	5.47	34.456	1.01	27.209	86.9	1.596								
2137A	1.92	34.667						38.7	800	4.96	34.490	1.07	27.297	70.5	1.688								
2248	1.88	34.650	2.59					38.2	1000	4.14	34.526	1.16	27.415	67.3	1.852								
2443	1.78	34.661	2.72					36.7	1500	2.76	34.592	1.71	27.603	49.5	2.188								
2698	1.72	34.668	2.84					35.7	2000	2.07	34.638</td												

RV HORIZON

MAI MAI EXPEDITION

3

	LATITUDE 16 30.0N	LONGITUDE 152 10.0W	MO/DAY/YR 09/15/66	MESSINGER TIME 1900 2250GMT	BOTTOM	WIND 070	SPEED 14KT	WEATHER 1	DOMINANT WAVES 060 08 04				
Z	T	S	D2	P04 S103	N02 N03	DT	Z	T	S	D2	SIGT	DT	DD
0	26.57	34.524	4.68			533.5	0	26.57	34.524	4.68	22.518	533.5	0
10	26.56	34.523	4.69			533.3	10	26.56	34.523	4.69	22.520	533.3	.053
49	26.58	34.527	4.66			533.6	20	26.57	34.526	4.66	22.519	533.4	.107
99	23.40	34.621	5.04			420.3	30	26.57	34.525	4.66	22.518	533.5	.160
198	15.34	34.449	3.72			249.9	50	26.58	34.530	4.66	22.519	533.4	.267
296	9.50	34.294	1.90			153.7	75	24.80	34.680	4.88	23.181	470.1	.393
399	8.68	34.535	.3			123.3	100	23.33	34.620	5.04	23.724	418.3	.505
496	7.34	34.467	.38			109.3	125	21.60	34.770	4.84	24.175	375.3	.605
594	6.44	34.479	.48			96.7	150	20.50	34.745	4.57	24.435	350.4	.697
791	5.17	34.499	.57			80.1	200	15.17	34.442	3.68	25.522	247.0	.850
988	4.30	34.530	.86			69.1	250	11.80	34.320	2.77	26.110	190.3	.962
1183	3.76	34.555	1.16			61.1	300	9.47	34.314	1.82	26.526	151.7	1.050
1380	3.26	34.580	1.38			54.0	400	8.67	34.535	.30	26.827	123.1	1.195
1576	2.84	34.595	1.60			50.0	500	7.30	34.467	.38	26.978	108.7	1.318
1773	2.43	34.611	1.91			45.4	600	6.39	34.480	.48	27.112	96.1	1.429
1970	2.15	34.630	2.13			41.0	700	5.58	34.490	.53	27.211	86.7	1.529
2093A	2.00	34.639	2.34			40.6	800	5.13	34.501	.58	27.286	79.5	1.622
2166	1.98	34.643	2.38			39.5	1000	4.32	34.532	.88	27.402	68.6	1.789
2289A	1.93	34.647	2.47			38.8	1200	3.69	34.557	1.18	27.487	60.5	1.938
2363	1.86	34.653	2.57			37.9	1500	3.00	34.591	1.51	27.580	51.7	2.137
2485A	1.82	34.657	2.63			37.3	2000	2.13	34.633	2.19	27.688	41.5	2.419
2682A	1.73	34.664	2.79			36.1	2500	1.81	34.658	2.64	27.734	37.2	2.664
2878A	1.67	34.672	2.85			35.0	3000	1.64	34.673	2.93	27.759	34.8	2.895
3074A	1.62	34.673	2.98			34.6	3500	1.53	34.683	3.23	27.775	33.3	3.119
3270A	1.58	34.676				34.1	4000	1.45	34.690	3.64	27.786	32.2	3.341
3466A	1.54	34.683	3.20										
3662A	1.50	34.683	3.36										
3760A	1.49	34.689	3.44										
3858A	1.48	34.690	3.60										
3956A	1.46	34.689	3.61										
4054A	1.45												
4153A	1.44	34.691	3.77										
4202A	1.44	34.694	3.80										
4250A	1.44	34.697	3.80										
4299A	1.43	34.696	3.92										
4349A	1.43	34.696	3.88										
4436A	1.43	34.698	3.90										
4446A	1.42	34.697	3.88										

RV HORIZON

MAI MAI EXPEDITION

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	LATITUDE 20 30.0N	LONGITUDE 150 00.0W	MO/DAY/YR 09/16/66	MESSINGER TIME 1910 0125GMT	BOTTOM	WIND 5272M	SPEED 060	WEATHER	DOMINANT WAVES 060 05 05				
Z	T	S	U2	P04 S103	N02 N03	DT	Z	T	S	D2	SIGT	DT	DD
0	25.61	35.103	4.79			463.2	0	25.61	35.103	4.79	23.253	463.2	0
59	22.90	34.980	5.26			395.0	10	25.61	35.100	4.79	23.251	463.4	.046
99	20.10	35.011	4.93			319.2	20	25.61	35.100	4.79	23.251	463.4	.093
197	13.86	34.306	4.30			230.1	30	25.61	35.100	4.79	23.251	463.4	.139
493	6.02	34.204	1.03			112.1	50	25.61	35.100	4.79	23.251	463.4	.232
788	4.62	34.475	.85			76.0	75	21.60	35.000	5.13	24.349	358.7	.336
982	4.06	34.522	1.00			66.7	100	20.03	35.007	4.92	24.778	317.8	.421
1277	3.26	34.557	1.40			56.5	125	18.31	34.860	4.76	25.107	286.5	.497
1570	2.66	34.596	1.66			48.6	150	16.63	34.650	4.62	25.351	263.3	.567
1662	2.20	34.623	2.07			42.7	200	13.72	34.295	4.27	25.721	228.1	.693
2156	1.94	34.639	2.37			39.5	250	11.61	34.175	3.68	26.042	197.6	.802
2452	1.76	34.654	2.66			37.1	300	9.83	34.122	3.10	26.316	171.6	.897
2745	1.65	34.667	2.80			35.3	400	7.25	34.138	2.00	26.727	132.6	1.056
3041	1.59	34.672	3.01			34.5	500	5.95	34.211	1.02	26.957	110.8	1.184
3237	1.56	34.683	3.12			33.4	600	5.27	34.320	.90	27.127	94.7	1.293
3433	1.53	34.684	3.24			33.2	700	4.99	34.460	.88	27.270	81.1	1.389
3443A	1.52	34.682	3.27			33.2	800	4.50	34.478	.85	27.331	75.3	1.475
3532	1.52	34.683	3.30			33.2	1000	4.01	34.525	1.02	27.429	66.0	1.634
3541A	1.52	34.686	3.27			32.9	1200	3.46	34.550	1.29	27.505	58.9	1.777
3630	1.51	34.684	3.38			33.0	1500	2.79	34.588	1.60	27.597	50.1	1.969
3639A	1.50	34.685	3.35			32.9	2000	2.06	34.632	2.22	27.693	41.0	2.243
3731	1.50	34.686	3.44			32.8	2500	1.74	34.657	2.69	27.739	36.7	2.406
3738A	1.50	34.688	3.42			33.3	3000	1.60	34.672	2.98	27.761	34.6	2.711
3829	1.48	34.687	3.44			32.6	3500	1.52	34.683	3.29	27.776	33.2	2.934
3834A	1.48	34.688	3.47			32.5	4000	1.47	34.687	3.59	27.783	32.5	3.156
3933A	1.48	34.686	3.54			32.7	4500	1.45	34.700	3.89	27.794	31.4	3.380
4030A	1.47	34.688				32.4	5000	1.46	34.700	4.03	27.796	31.5	3.606
4128A	1.46	34.692	3.68										
4226A	1.46	34.692	3.74										
4322A	1.46	34.692	3.87										
4422A	1.46	34.696	3.91										
4519A	1.45	34.70	3.91										
4617A	1.46	34.694	3.87										
4715A	1.45	34.696	3.91										
4813A	1.45	34.70	4.00										
4911A	1.45	34.70	4.01										
5008A	1.45	34.700	4.03										
5106A	1.45	34.698	4.06										
5194A	1.45	34.699	4.08										
5204A	1.45	34.701	4.02										

AT CAST II.

RV HORIZON

MAI MAI EXPEDITION

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	LATITUDE 24 30.0N	LONGITUDE 148 00.0W	MO/DAY/YR 09/21/66	MESSINGER 0504	TIME 0839GMT	BOTTOM 5331M	WIND 080	SPEED 14KT	WEATHER 1	DOMINANT WAVES 060 08 06					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	24.97	35.187	4.85			438.5	0	24.97	35.187	4.85	23.512	438.5	0		
69	22.91	35.228	5.11			377.4	10	24.97	35.190	4.92	23.515	438.2	.044		
99	20.66	35.182	5.07			320.6	20	24.97	35.190	4.98	23.515	438.2	.088		
196	17.20	34.840	4.86			262.2	30	24.97	35.190	5.02	23.515	438.2	.132		
492	6.50	34.019	2.63			131.8	50	23.92	35.240	5.09	23.867	404.6	.216		
787	4.37	34.353	.65			82.5	75	22.45	35.220	5.11	24.277	365.5	.313		
983	3.93	34.486	.9			68.1	100	20.59	35.179	5.07	24.762	319.3	.400		
1277	3.28	34.544	1.36			57.7	125	19.43	35.100	5.02	25.006	296.1	.477		
1571	2.70	34.583	1.65			49.7	150	18.46	35.000	4.98	25.176	279.9	.551		
1865	2.26	34.611	1.93			44.1	200	17.04	36.820	4.84	25.384	260.1	.689		
2158	1.95	34.634	2.12			40.0	250	14.94	34.570	4.53	25.672	232.7	.815		
2454	1.76	34.654	2.49			36.9	300	12.97	34.380	4.20	25.938	207.5	.929		
2748	1.66	34.670	2.72			35.0	400	9.38	34.130	3.44	26.396	163.9	1.123		
3043	1.56	34.676	2.94			34.0	500	6.36	34.027	2.58	26.759	129.5*	1.277		
3238	1.53	34.677	3.09			33.7	600	5.29	34.170	1.73	27.006	106.1	1.401		
3435	1.51	34.683	3.21			33.1	700	4.73	34.290	1.07	27.165	91.0	1.507		
3685A	1.50	34.684	3.25			33.0	800	4.33	34.363	.67	27.267	81.4	1.601		
3534	1.51	34.684	3.24			33.0	1000	3.89	34.492	.93	27.419	67.3	1.766		
3585A	1.50	34.690U	3.26				1200	3.65	34.538	1.24	27.496	59.7	1.911		
3631	1.51	34.684	3.46			33.0	1500	2.83	34.576	1.59	27.583	51.4	2.106		
3682A	1.49	34.685	3.52			32.8	2000	2.10	34.623	2.01	27.683	42.0	2.387		
3730	1.50	34.688	3.3			32.6	2500	1.72	34.658	2.53	27.740	36.5	2.630		
3781A	1.50	34.689	3.36			32.6	3000	1.57	34.676	2.91	27.766	34.1	2.855		
3827	1.49						3500	1.50	34.684	3.25	27.778	33.0	3.075		
3879A	1.48	34.693	3.41			32.1	4000	1.48	34.692	3.48	27.786	32.2	3.296		
3978A	1.48	34.692	3.48			32.2	4500	1.51	34.698	3.63	27.789	32.0	3.522		
4076A	1.49	34.692				32.3	5000	1.51	34.700	3.83	27.790	31.8	3.753		
4173A	1.49	34.696	3.52			32.0									
4271A	1.51	34.693	3.50			32.3									
4370A	1.50	34.690	3.55			32.5									
4468A	1.51	34.698	3.63			32.0									
4567A	1.50	34.697	3.64			32.0									
4665A	1.51	34.694	3.70			32.3									
4763A	1.51	34.701	3.74			31.7									
4863A	1.51	34.696	3.78			32.1									
4961A	1.51	34.700	3.82			31.8									
5060A	1.52	34.699	3.84			32.0									
5158A	1.53	34.698	3.90			32.1									
5247A	1.54	34.699	3.90			32.1									
5257A	1.53	34.699	3.87			32.0									

RV HORIZON

MAI MAI EXPEDITION

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	LATITUDE 26 20.0N	LONGITUDE 143 00.0W	MO/DAY/YR 09/23/66	MESSINGER 0145	TIME 0534GMT	BOTTOM 4842M	WIND 300	SPEED 02KT	WEATHER 1	DOMINANT WAVES 060 10 10					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	24.49	35.386	4.91			410.3	0	24.49	35.386	4.91	23.808	410.3	0		
59	22.26	35.280	5.25			356.0	10	24.41	35.390	4.92	23.835	407.7	.041		
99	19.64	35.112	5.07			300.4	20	24.32	35.380	4.94	23.854	405.9	.082		
196	14.89	34.494	4.75			237.2	30	24.20	35.380	4.98	23.890	402.5	.122		
393	8.41	34.045	4.12			155.7	50	23.00	35.320	5.20	24.196	373.2	.200		
591	5.49	34.115	1.14			112.5	75	21.24	35.220	5.20	24.615	333.3	.289		
787	4.42	34.348	.6			83.4	100	19.58	35.107	5.07	24.971	299.4	.369		
983	3.94	34.470	1.00			69.4	125	18.20	34.950	4.98	25.203	277.4	.442		
1180	3.48	34.526	1.24			60.9	150	16.60	34.720	4.89	25.412	257.4	.510		
1376	3.04	34.559	1.44			54.4	200	14.72	34.475	4.75	25.667	235.1	.636		
1573	2.67	34.582	1.66			49.5	250	12.73	34.290	4.60	25.916	209.6	.750		
1770	2.38	34.599	1.67			45.9	300	10.98	34.160	4.57	26.145	187.8	.852		
1966	2.14	34.621	1.86			42.4	400	8.26	34.062	4.02	26.504	153.7	1.030		
2260	1.86	34.642	2.19			38.7	500	6.50	34.052	2.53	26.761	129.4	1.179		
2555	1.70	34.656	2.53			36.5	600	5.61	34.126	1.12	26.956	110.9	1.306		
2849	1.61	34.675	2.77			34.4	700	4.75	34.245	.84	27.128	94.6	1.416		
3045	1.55	34.676	2.95			33.9	800	4.38	34.359	.61	27.258	82.2	1.512		
3060A	1.55	34.676	2.96			33.4	1000	3.90	34.476	1.02	27.401	68.7	1.679		
3143	1.53	34.681	3.06			32.7	1200	3.43	34.530	1.26	27.491	60.1	1.826		
3159A	1.52	34.680	3.00			33.4	1500	2.80	34.575	1.58	27.586	51.2	2.022		
3242	1.52	34.684	3.11			33.1	2000	2.10	34.625	1.90	27.684	41.9	2.301		
3257A	1.51	34.682	3.10			33.2	2500	1.72	34.654	2.47	27.737	36.8	2.544		
3340	1.50	34.683	3.12			33.0	3000	1.56	34.677	2.91	27.768	33.9	2.770		
3355A	1.49	34.683	3.17			33.0	3500	1.48	34.688	3.25	27.783	32.5	2.988		
3453A	1.48	34.689	3.22			32.4	4000	1.49	34.694	3.46	27.787	32.1	3.207		
3590A	1.48	34.686	3.28			32.7	4500	1.53	34.694	3.57	27.784	32.4	3.434		
3648A	1.48	34.686				32.7									
3747A	1.48	34.694	3.30			32.1									
3846A	1.47	34.692	3.46			32.1									
3944A	1.48	34.693	3.46			32.1									
4041A	1.49	34.694	3.48			32.1									
4139A	1.49	34.692	3.47			32.3									
4237A	1.51	34.693	3.51			32.3									
4335A	1.51	34.698	3.56			32.0									
4434A	1.52	34.699	3.57			32.3									
4533A	1.53	34.694	3.57			32.4									
4631A	1.54	34.697	3.61			32.2									
4729A	1.55	34.694	3.66			32.9									
4820A	1.55	34.696	3.69			32.4									
4830A	1.54	34.700	3.64			32.0									

RV HORIZON

MAI HAI EXPEDITION

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Z	T	S	D2	PO4	SI03	NO2	NO3	DT	WEATHER								DOMINANT WAVES		
									09/24/66	MESSINGER	TIME	BOTTOM	WIND	SPEED	1	300	07	10	
0	22.91	35.260	5.00					374.5	0	22.91	35.260	5.00	24.183	374.5	0				
49	21.99	35.228	5.20					352.5	10	22.87	35.260	5.01	24.188	374.0	.037				
99	17.56	34.573	5.45					289.4	20	22.83	35.260	5.02	24.200	372.9	.075				
197	12.10	34.039	4.86					216.4	30	22.77	35.260	5.04	24.217	371.3	.112				
393	6.90	34.012	3.00					137.4	50	21.88	35.212	5.21	24.432	350.8	.185				
591	5.12	34.215	.61					100.9	75	19.00	34.790	5.35	24.880	308.1	.268				
788	4.40	34.370	.40					81.0	100	17.50	34.570	5.45	25.084	288.7	.343				
985	3.86	34.474	.83					68.4	125	16.67	34.510	5.36	25.235	276.3	.414				
1181	3.44	34.515	1.12					61.3	150	16.00	34.640	5.23	25.336	264.7	.483				
1377	3.00	34.557	1.32					54.2	200	11.98	34.030	4.85	25.860	214.9	.605				
1573	2.67	34.578	1.45					49.8	250	10.15	33.960	4.44	26.135	188.7	.708				
1769	2.35	34.598	1.64					45.7	300	8.68	33.950	3.97	26.367	166.7	.800				
1965	2.12	34.619	1.86					42.4	400	6.80	34.019	2.90	26.696	135.7	.957				
2159	1.95	34.632	2.06					40.1	500	5.70	34.122	1.60	26.918	114.5	1.088				
2453	1.74	34.652	2.42					37.1	600	5.07	34.224	.60	27.076	99.7	1.201				
2646	1.68	34.661	2.59					36.0	700	4.65	34.313	.49	27.193	88.4	1.302				
2841	1.61	34.667	2.73					35.0	800	4.36	34.386	.42	27.281	80.0	1.394				
2899A	1.57	34.667	2.86					34.7	1000	3.83	34.478	.86	27.411	67.7	1.559				
2939	1.67	34.660	2.85					34.4	1500	2.79	34.573	1.40	27.584	51.3	1.900				
2998A	1.58	34.672	2.87					34.2	2000	2.09	34.622	1.90	27.684	41.9	2.180				
3036	1.57	34.674	2.90					34.1	2500	1.72	34.655	2.47	27.738	36.8	2.423				
3096A	1.54	34.673	2.97					33.8											
3133	1.55	34.676	2.97					33.0											
3194A	1.52	34.679	3.00					33.5	3500	1.52	34.676	3.16	27.770	33.7	2.673				
3293A	1.52	34.682	3.07					33.2	4000	1.52	34.683	3.29	27.776	33.2	3.099				
3391A	1.52	34.679	3.09					33.5	4500	1.56	34.690	3.47	27.778	32.9	3.331				
3488A	1.52	34.675																	
3587A	1.50	34.683	3.21																
3684A	1.51	34.680	3.22																
3784A	1.52	34.682	3.27																
3881A	1.53	34.688	3.32																
3980A	1.52	34.683	3.28																
4078A	1.53	34.683	3.36																
4175A	1.53	34.686	3.36																
4273A	1.54	34.685	3.39																
4372A	1.55	34.684	3.41																
4471A	1.56	34.690	3.45																
4569A	1.56	34.689	3.52																
4656A	1.58	34.686	3.50																
4666A	1.58	34.688	3.45																

RV HORIZON

MAI HAI EXPEDITION

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Z	T	S	D2	PO4	SI03	NO2	NO3	DT	WEATHER								DOMINANT WAVES		
									09/26/66	MESSINGER	TIME	BOTTOM	WIND	040	05KT	1	350	03	
0	20.71	34.152	5.26					396.9	0	20.71	34.152	5.26	23.948	396.9	0				
49	18.38	33.933	5.72					355.3	10	20.63	34.140	5.29	23.960	395.8	.040				
99	15.46	33.837	5.64					297.2	20	20.22	34.090	5.42	24.031	389.0	.079				
148	12.33	33.648	5.09					269.4	30	20.18	34.090	5.43	24.041	388.0	.118				
197	9.76	33.812	4.27					193.1	50	18.26	33.927	5.72	24.408	353.1	.192				
247	9.46	34.047	4.80					171.0	75	15.70	33.850	5.60	24.951	301.3	.275				
296	8.35	34.021	4.2					156.6	100	15.45	33.830	5.64	24.991	297.5	.350				
345	7.52	34.007	3.64					146.0	125	14.50	33.780	5.40	25.159	281.5	.423				
394	6.62	34.005	2.76					134.3	150	12.17	33.648	5.05	25.527	246.6	.490				
493	5.35	34.075	1.6					116.2	200	9.72	33.835	4.30	26.109	191.2	.601				
592	4.98	34.170	.78					102.7	250	9.38	34.049	4.70	26.333	170.0	.694				
788	4.24	34.366	.47					80.2	300	8.28	34.020	4.16	26.483	155.7	.778				
986	3.75	34.472	.77					67.5	400	6.53	34.008	2.67	26.722	133.1	.928				
1182	3.28	34.518	1.02					59.6	500	5.50	34.082	1.53	26.911	115.2	1.058				
1377	2.93	34.552	1.26					54.0	600	4.94	34.179	.77	27.053	101.6	1.172				
1575	2.63	34.583	1.42					49.1	700	4.52	34.283	.61	27.183	89.4	1.275				
1770	2.37	34.602	1.65					45.6	800	4.21	34.375	.46	27.289	79.3	1.366				
1874A	2.24	34.618	1.80					43.4	1000	3.71	34.477	.79	27.421	66.8	1.528				
1965	2.17	34.620	1.88					42.7	1200	3.24	34.522	1.04	27.503	59.1	1.671				
2072A	2.06	34.633	1.96					40.9	1500	2.74	34.573	1.36	27.589	50.8	1.863				
2160	1.97	34.642	2.10					39.5	2000	2.14	34.624	1.90	27.681	42.1	2.143				
2268A	1.90	34.641	2.19					39.1	2500	1.78	34.654	2.37	27.733	37.3	2.389				
2355	1.84							37.6	3000	1.57	34.667	2.80	27.759	34.8	2.618				
2462A	1.80	34.650	2.33					35.9	4000	1.53	34.684	3.12	27.778	33.0	2.840				
2659A	1.70	34.664	2.36					35.2											
2854A	1.62	34.665	2.69					34.5											
3049A	1.50	34.669						33.6											
3147A	1.54	34.679	2.91					33.7											
3246A	1.53	34.677	2.99					33.5											
3344A	1.51	34.678	3.08					33.0	</										

RV HORIZON										NAI NAI EXPEDITION									
	LATITUDE 30 40.0N	LONGITUDE 120 40.0W	MO/DAY/YR 09/29/66	MESSENDER 1703	TIME 2120GMT	BOTTOM 3776M	WIND 120	SPEED 02KT	WEATHER	DOMINANT WAVES									
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD				
0	18.09	33.651	5.52		369.2	0	18.09	33.651	5.52	24.238	369.2		0						
10	18.04	33.652	5.54		368.0	10	18.04	33.652	5.54	24.251	368.0		.037						
40	14.94	33.209	6.04		324.1	20	17.99	33.650	5.55	24.262	367.0		.074						
99	10.23	33.435	4.94		228.9	30	17.93	33.640	5.59	24.269	366.3		.110						
148	9.04	33.866	3.34		178.3	50	13.58	33.180	5.90	24.889	307.3		.178						
197	8.31	34.010	3.05		156.8	75	11.59	33.240	5.35	25.320	266.2		.250						
245	7.68	34.077	2.1		143.0	100	10.19	33.446	4.51	25.727	227.5		.312						
295	7.21	34.117	1.64		133.6	125	9.44	33.682	3.81	26.037	198.1		.366						
344	6.98	34.210	.96		123.7	150	9.00	33.876	3.33	26.258	177.1		.414						
393	6.69	34.266	.67		115.8	200	8.27	34.016	2.99	26.482	155.8		.498						
443	6.40	34.297	.52		109.8	250	7.62	34.081	2.05	26.626	141.9		.575						
492	6.07	34.326	.39		103.6	300	7.18	34.126	1.57	26.727	132.6		.666						
590	5.43	34.368	.33		92.9	400	6.65	34.271	.64	26.914	114.9		.775						
689	4.99	34.408	.37		85.0	500	6.01	34.330	.39	27.043	102.6		.890						
788	4.56	34.432	.45		78.6	600	5.38	34.373	.33	27.155	92.0		.996						
885	4.26	34.461	.52		73.3	700	4.94	34.411	.38	27.237	84.2		1.089						
984	3.92	34.490	.65		67.7	800	4.52	34.436	.46	27.304	77.9		1.179						
1179	3.43	34.533	.93		59.9	1000	3.87	34.494	.67	27.419	67.0		1.340						
1376	3.00	34.568	1.14		53.4	1200	3.38	34.538	.95	27.502	59.1		1.486						
1421A	2.91	34.572	1.19		52.3	1500	2.77	34.581	1.26	27.593	50.5		1.677						
1572	2.66	34.590	1.35		48.9	2000	2.11	34.636	1.96	27.693	41.0		1.953						
1617A	2.59	34.597	1.44		47.7	2500	1.80	34.660	2.44	27.736	37.0		2.196						
1813A	2.28	34.617	1.71		43.8	3000	1.64	34.674	2.79	27.760	34.7		2.425						
2099A	2.10	34.636	1.97		40.9	3500	1.50	34.685	3.01	27.773	33.5		2.651						
2207A	1.94	34.650	2.20		38.7														
2403A	1.84	34.656	2.36		37.5														
2600A	1.77	34.663	2.67		36.4														
2796A	1.70	34.671	2.67		35.3														
2992A	1.64	34.674	2.79		34.7														
3091A	1.62	34.675	2.83		34.5														
3189A	1.62	34.678	2.87		34.2														
3287A	1.59	34.680	2.92		33.9														
3385A	1.59	34.681	2.97		33.8														
3439A	1.58	34.684	2.98		33.5														
3538A	1.58	34.685	3.02		33.4														
3629A	1.57	34.686	3.02		33.3														
3680A	1.58	34.689	3.05		33.1														
3729A	1.58	34.686	3.06		33.4														
3768A	1.58	34.686	3.07		33.4														
3778A	1.57	34.688	3.02		33.1														

A) CAST II.

BUOY BOUNCE Expedition

The purpose of BUOY BOUNCE Expedition was to study the vertical migration of plankton by means of a vertically migrating drogue and bongo net tows. BUOY BOUNCE was sponsored by the National Science Foundation.

Determinations of reactive phosphate were made with a DU spectrophotometer by the method suggested by Murphy and Riley (1960). Chlorophyll and phaeophytin were determined using the method of Yentsch and Menzel (1963). Due to insufficient acidification the chlorophyll-a and phaeophytin data on stations H-1, H-2, and H-3 may be slightly in error.

S/T/D data for 32 lowerings are presented in two forms: 1) as tabulated values at standard depths, and 2) as continuous traces of temperature and salinity versus depth. The manufacturer of the Model 9006 S/T/D, Plessey Environmental Systems, claims an accuracy of $\pm 0.05^{\circ}\text{C}$ with repeatability of $\pm 0.01^{\circ}\text{C}$ for temperature and an accuracy of $\pm 0.03\%$ with repeatability of $\pm 0.01\%$ for salinity. The time given is "start down" time.

Scientific personnel participating in the data collection were:

Miller, C. B., (in charge)
Brown, C. A.
Bryan, W. R.
Curtis, T. C.
Dana, T. F.
Frost, B. W.
Graham, J. B
Mantyla, A. W.
Santononio, D.
Snyder, H. G.
Wiebe, P. H.
Wilcox, M. E.

Papers resulting from BUOY BOUNCE Expedition data are:

Miller, Charles B., 1969. Some environmental consequences of vertical migration. Doctoral dissertation, Univ. Calif. San Diego, 308 pp.

Miller, Charles B., 1970. Some environmental consequences of vertical migration in marine zooplankton. Limnol. & Oceanogr., 15: 727-741.

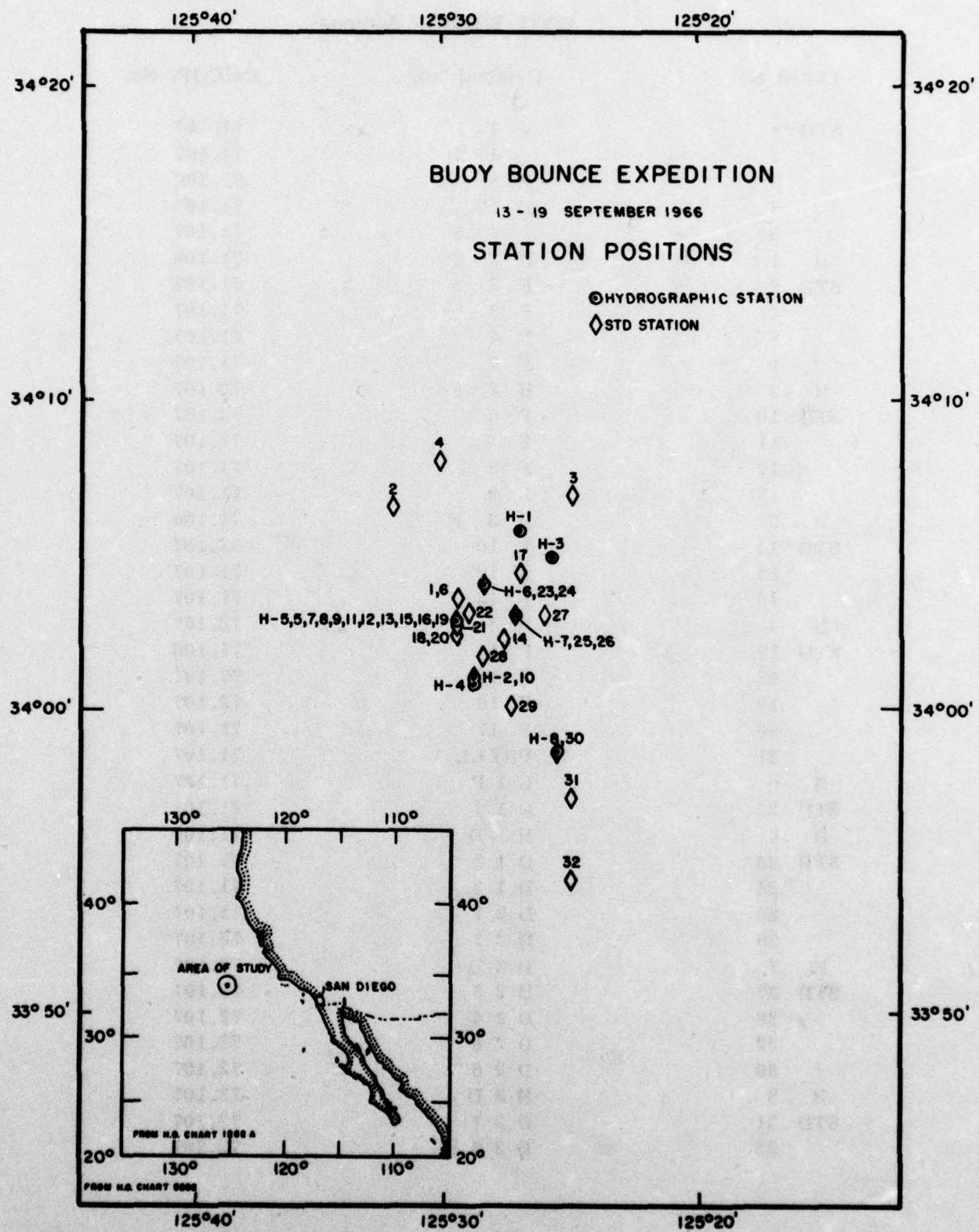


FIGURE 3

BUOY BOUNCE Stations

Listed No.	Original No.	CalCOFI No.
STD 1	4 1	71.107
2	4 2	71.107
3	M 8	71.106
4	M 10	71.107
5	4 5	71.107
H 1	H 1 F	71.106
STD 6	F 2	71.107
7	F 3	71.107
8	F 4	71.107
9	F 5	71.107
H 2	H 2 F	72.107
STD 10	F 6	72.107
11	F 7	71.107
12	F 8	71.107
13	F 9	71.107
H 3	H 3 F	71.106
STD 14	F 10	72.107
15	F 12	71.107
16	F 13	71.107
H 4	H 4 F	72.107
STD 17	F 14	71.106
18	F 15	72.107
19	F 16	72.107
20	F 17	71.107
21	PHYLL	71.107
H 5	H 1 P	71.107
STD 22	D 1 1	71.107
H 6	H 1 D	71.107
STD 23	D 1 2	71.107
24	D 1 3	71.107
25	D 2 1	72.107
26	D 2 2	72.107
H 7	H 2 D	72.107
STD 27	D 2 3	72.107
28	D 2 4	72.107
29	D 2 5	72.107
30	D 2 6	72.107
H 8	H 3 D	72.107
STD 31	D 2 7	72.107
32	D 2 8	72.107

RV ALEXANDER AGASSIZ BUOY BOUNCE EXPEDITION STD 1

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	Dominant Waves						
34 03.8N	125 29.5W	09/13/66	1043	GMT	4536M										
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
									0	18.08	33.09	23.813	409.8	0	
									10	18.08	33.09	23.813	409.8	.041	
									20	18.08	33.09	23.813	409.8	.082	
									30	17.76	33.14	23.928	398.8	.123	
									50	14.13	33.03	24.660	329.0	.196	
									75	11.92	33.03	25.096	287.5	.273	
									100	11.59	33.27	25.363	264.0	.342	
									125	10.08	33.49	25.781	222.4	.404	
									150	9.61	33.68	26.008	200.9	.457	
									200	8.79	33.98	26.374	166.1	.551	
									250	8.18	34.06	26.530	151.3	.632	
									300	7.66	34.10	26.638	141.0	.708	
									400	6.38	34.11	26.823	123.5	.845	
									500	5.73	34.19	26.968	109.7	.968	
									600	5.28	34.28	27.094	97.8	1.078	

RV ALEXANDER AGASSIZ BUOY BOUNCE EXPEDITION STD 2

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	Dominant Waves						
34 06.5N	125 32.0W	09/13/66	1510	GMT											
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
									0	18.05	33.12	23.843	406.9	0	
									10	18.05	33.12	23.843	406.9	.041	
									20	18.07	33.13	23.846	406.7	.082	
									30	17.95	33.15	23.890	402.4	.122	
									50	14.20	33.06	24.668	328.2	.195	
									75	11.62	33.03	25.152	282.2	.272	
									100	11.05	33.24	25.418	256.9	.340	
									125	9.92	33.51	25.824	218.3	.400	
									150	9.44	33.76	26.098	192.3	.452	
									200	8.64	33.98	26.397	163.9	.542	
									250	8.15	34.08	26.550	149.3	.623	
									300	7.59	34.10	26.648	140.0	.697	
									400	6.23	34.12	26.850	120.9	.833	
									500	5.75	34.20	26.974	109.2	.954	
									600	5.10	34.26	27.099	97.3	1.064	

RV ALEXANDER AGASSIZ BUOY BOUNCE EXPEDITION STD 3

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	Dominant Waves						
34 06.8N	125 25.0W	09/13/66	2115	GMT	4884M	340	16KT	1	330 06 05						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
									0	18.27	33.12	23.789	412.1	0	
									10	18.21	33.12	23.804	410.7	.041	
									20	18.14	33.13	23.828	408.3	.082	
									30	18.14	33.13	23.828	408.3	.122	
									50	14.80	33.04	24.526	341.8	.198	
									75	12.75	33.18	25.054	291.5	.278	
									100	10.73	33.03	25.311	267.0	.348	
									125	10.05	33.33	25.662	233.7	.411	
									150	9.49	33.68	26.027	199.0	.466	
									200	8.78	33.97	26.367	166.7	.559	
									250	8.34	34.06	26.506	153.6	.641	
									300	7.71	34.09	26.623	142.4	.718	
									400	6.40	34.10	26.812	124.5	.856	
									500	5.79	34.18	26.953	111.1	.980	
									600	5.29	34.26	27.077	99.4	1.092	

RV ALEXANDER AGASSIZ BUOY BOUNCE EXPEDITION STD 4

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	Dominant Waves						
34 08.0N	125 30.2W	09/14/66	0312	GMT	4650M	330	19KT	1	330 05						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
									0	18.21	33.13	23.811	409.9	0	
									10	18.21	33.14	23.819	409.2	.041	
									20	18.11	33.17	23.866	404.7	.082	
									30	18.01	33.17	23.891	402.4	.122	
									50	15.10	33.07	24.485	345.8	.197	
									75	12.22	33.02	25.032	293.6	.278	
									100	11.17	33.24	25.397	258.9	.347	
									125	10.09	33.45	25.748	225.5	.408	
									150	9.52	33.72	26.054	196.5	.462	
									200	8.68	33.98	26.391	164.5	.554	
									250	8.12	34.07	26.547	149.7	.634	
									300	7.49	34.11	26.671	137.9	.708	
									400	6.32	34.12	26.838	122.0	.843	
									500	5.70	34.20	26.980	108.6	.965	
									600	5.18	34.26	27.090	98.2	1.075	

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 5

LATITUDE 34 02.8N		LONGITUDE 125 29.5W		MO/DAY/YR 09/14/66		MESSANGER 0650	TIME GMT	BOTTOM 4650M	WIND 350	SPEED 13KT	WEATHER	DOMINANT WAVES 340 05 06			
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.12	33.10							23.810	410.0	0				
10	18.14	33.10							23.806	410.5	.041				
20	18.12	33.11							23.818	409.3	.082				
30	18.06	33.16							23.871	404.3	.123				
50	15.63	33.06							24.361	357.6	.199				
75	12.62	33.00							24.940	302.4	.282				
100	10.80	32.99							25.268	271.2	.354				
125	10.22	33.35							25.648	235.0	.418				
150	9.78	33.64							25.968	206.5	.474				
200	8.77	33.96							26.361	167.3	.569				
250	8.13	34.06							26.538	150.5	.651				
300	7.54	34.09							26.648	140.1	.726				
400	6.32	34.10							26.823	123.5	.863				
500	5.66	34.18							26.969	109.6	.985				
600	5.18	34.26							27.090	98.2	1.095				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

H 1

LATITUDE 34 05.8N		LONGITUDE 125 27.0W		MO/DAY/YR 09/14/66		MESSANGER 0840	TIME GMT	BOTTOM 4650M	WIND 350	SPEED 13KT	WEATHER	DOMINANT WAVES 340 05 06	
Z	T	S	D2	P04	S103	N02	N03	NH4	CHLA	PHAE			
0	18.14	33.109	5.42	.38					.06	.07			
10	18.13	33.107	5.53	.41					.03	.20			
35	17.79	33.149	5.67	.38					.04	.08			
44	15.60	33.083	6.14	.39					.05	.13			
59	13.78	33.027	6.75	.46					.30	.00			
74	12.14		6.04	.66					.23	.07			
98	10.71		5.68	.96					.11	.04			
118	10.28		4.83	2.09U					.06	.07			
138	9.95		4.01	1.69					.02	.02			
167	9.31		3.40	1.92					.06	.23U			
197	8.82		2.88	2.11					.03	.23U			
236	8.27		2.65	2.36					.00	.02			
266	7.94		2.03	2.50					.00	.01			
315	7.36		1.60	2.71					.00	.01			
379	6.50		1.40	2.96					.00	.01			
478	5.80		.71	3.23					.00	.01			
567	5.64	34.243	.38	3.36									
640	4.90		.35	3.42									

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 6

LATITUDE 34 03.5N		LONGITUDE 125 29.5W		MO/DAY/YR 09/14/66		MESSANGER 1045	TIME GMT	BOTTOM 4650M	WIND 340	SPEED 16KT	WEATHER	DOMINANT WAVES 340 05 06			
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.05	33.11							23.835	407.7	0				
10	18.07	33.12							23.838	407.4	.041				
20	17.71	33.11							23.918	399.8	.081				
30	16.36	33.00							24.150	377.6	.120				
50	13.64	32.96							24.707	324.6	.191				
75	11.67	33.02							25.135	283.8	.267				
100	10.75	33.19							25.432	255.5	.335				
125	10.07	33.41							25.720	228.1	.396				
150	9.43	33.71							26.060	195.8	.450				
200	8.63	33.98							26.399	163.7	.541				
250	8.03	34.07							26.560	148.4	.621				
300	7.46	34.08							26.651	139.7	.695				
400	6.17	34.09							26.834	122.4	.832				
500	5.62	34.19							26.982	108.4	.953				
600	5.20	34.27							27.095	97.6	1.062				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 7

LATITUDE 34 02.8N		LONGITUDE 125 29.5W		MO/DAY/YR 09/14/66		MESSANGER 1234	TIME GMT	BOTTOM 4650M	WIND 350	SPEED 13KT	WEATHER	DOMINANT WAVES 340 05 06			
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.07	33.14							23.853	405.9	0				
10	18.07	33.15							23.861	405.2	.041				
20	18.09	33.15							23.856	405.7	.081				
30	17.48	33.00							23.950	396.7	.121				
50	14.62	33.02							24.592	335.6	.195				
75	12.12	33.07							25.090	288.1	.273				
100	11.05	33.10							25.371	261.3	.342				
125	10.01	33.43							25.746	225.7	.404				
150	9.43	33.72							26.068	195.1	.457				
200	8.61	33.97							26.394	164.2	.549				
250	8.02	34.07							26.562	148.2	.629				
300	7.60	34.09							26.639	140.9	.703				
400	6.31	34.08							26.808	124.9	.841				
500	5.67	34.10							26.968	109.7	.964				
600	5.22	34.26							27.085	98.4	1.075				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION												STD 8			
LATITUDE 34 02.8N		LONGITUDE 125 29.5W		MO/DAY/YR 09/14/66		MESSENGER TIME 1530		BOTTOM 4673M		WIND 340 12KT		WEATHER 1		DOMINANT WAVES 340 05	
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.02	33.15							23.873	404.1	0				
10	18.03	33.15							23.871	404.3	.040				
20	18.02	33.15							23.873	404.1	.081				
30	17.66	33.15							23.960	395.8	.121				
50	16.18	32.98							24.611	333.7	.194				
75	12.18	32.96							24.993	297.3	.273				
100	10.85	33.17							25.399	258.7	.343				
125	9.97	33.48							25.792	221.4	.404				
150	9.60	33.70							26.025	199.2	.457				
200	8.71	33.96							26.371	166.4	.550				
250	8.24	34.06							26.521	152.1	.632				
300	7.58	34.08							26.634	141.4	.708				
400	6.32	34.11							26.830	122.8	.845				
500	5.72	34.18							26.962	110.3	.967				
600	5.24	34.26							27.083	98.8	1.079				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION												STD 9			
LATITUDE 34 02.8N		LONGITUDE 125 29.5W		MO/DAY/YR 09/14/66		MESSENGER TIME 1826		BOTTOM 4688M		WIND 010 12KT		WEATHER 1		DOMINANT WAVES 340 04	
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.15	33.15							23.841	407.1	0				
10	18.11	33.15							23.851	406.2	.041				
20	18.10	33.15							23.853	405.9	.081				
30	18.08	33.16							23.866	404.7	.122				
50	14.94	33.02							24.481	346.1	.197				
75	12.44	32.91							24.905	305.7	.279				
100	11.31	33.09							25.255	272.4	.352				
125	10.15	33.37							25.676	232.4	.416				
150	9.73	33.67							25.980	203.5	.471				
200	8.72	33.95							26.361	167.3	.565				
250	8.24	34.06							26.521	152.1	.647				
300	7.65	34.09							26.632	141.6	.723				
400	6.28	34.08							26.812	124.5	.861				
500	5.72	34.18							26.962	110.3	.984				
600	5.22	34.26							27.085	98.6	1.095				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION												H 2			
LATITUDE 34 00.9N		LONGITUDE 125 28.8W		MO/DAY/YR 09/14/66		MESSENGER TIME 2153		BOTTOM 4669M		WIND 360 10KT		WEATHER 1		DOMINANT WAVES 340 06 06	
Z	T	S	D2	P04	S103	N02	N03	DT	NH4	CHLA	PHAE				
0	18.40	33.156	5.58	.39						.04	.02				
10	18.15	33.152	5.60	.45						.05	.00				
20	18.10	33.153	5.62	.39						.05	.01				
30	16.72	32.952	5.90	.41						.09	.01				
50	14.40	33.004	6.26	.42						.17	.00				
67	13.02		6.25	.55						.40	.06				
90	11.49		5.73	.87						.14	.06				
109	10.80		5.24	1.61U						.05	.04				
127	9.98		5.05	1.18						.05	.05				
146	9.61		3.98	1.71											
174	9.02		3.20	2.03						.01	.04				
200	8.52		3.07	2.10						.00	.01				
236	8.13		2.74	2.23						.00	.01				
283	7.74		1.84	2.61						.00	.03				
336	6.84		1.85U	2.70						.00	.01				
418	6.18		1.00	3.05						.00	.02				
500	5.62	34.187	.56	3.29											
584	5.18	34.259	.36	3.36											

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION												STD 10			
LATITUDE 34 00.9N		LONGITUDE 125 28.8W		MO/DAY/YR 09/14/66		MESSENGER TIME 2222		BOTTOM 4669M		WIND 360 10KT		WEATHER 1		DOMINANT WAVES 340 06 06	
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.43	33.16							23.780	412.9	0				
10	18.14	33.15							23.844	406.9	.041				
20	18.11	33.16							23.859	405.4	.082				
30	18.07	33.15							23.861	405.2	.122				
50	14.75	32.98							24.491	345.2	.198				
75	12.65	32.99							24.927	303.7	.279				
100	11.27	33.15							25.309	267.3	.351				
125	10.30	33.33							25.619	237.8	.415				
150	9.68	33.65							25.973	204.2	.471				
200	8.73	33.95							26.360	167.4	.565				
250	8.08	34.03							26.522	152.1	.647				
300	7.56	34.10							26.653	139.6	.722				
400	6.40	34.10							26.812	124.5	.860				
500	5.72	34.18							26.962	110.3	.983				
600	5.14	34.26							27.095	97.7	1.093				

RV ALEXANDER AGASSIZ **BUOY BOUNCE EXPEDITION** **STD 11**

LATITUDE 34 02.8N	LONGITUDE 125 29.5W	MO/DAY/YR 09/15/66	MESSENGER 0226	TIME GMT	BOTTOM 4669M	WIND 190	SPEED 10KT	WEATHER 1	DOMINANT WAVES						
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.27	33.14							23.804	410.6	0				
10	18.27	33.15							23.812	409.9	.041				
20	18.13	33.15							23.846	406.6	.082				
30	18.09	33.16							23.864	405.0	.123				
50	15.15	33.07							24.474	346.8	.198				
75	12.22	33.04							25.048	292.1	.278				
100	11.13	33.18							25.357	262.7	.348				
125	10.10	33.39							25.700	230.1	.410				
150	9.63	33.70							26.020	199.7	.465				
200	8.86	33.96							26.347	168.6	.558				
250	8.27	34.06							26.516	152.5	.641				
300	7.61	34.10							26.645	140.3	.716				
400	6.32	34.10							26.823	123.5	.853				
500	5.73	34.18							26.960	110.4	.976				
600	5.30	34.26							27.076	99.5	1.088				

RV ALEXANDER AGASSIZ **BUOY BOUNCE EXPEDITION** **STD 12**

LATITUDE 34 02.8N	LONGITUDE 125 29.5W	MO/DAY/YR 09/15/66	MESSENGER 0319	TIME GMT	BOTTOM 4658M	WIND 360	SPEED 14KT	WEATHER 0	DOMINANT WAVES 340 05						
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.23	33.11							23.791	411.9	0				
10	18.23	33.12							23.799	411.1	.041				
20	18.06	33.14							23.856	405.7	.082				
30	18.04	33.14							23.860	405.3	.123				
50	15.33	33.08							24.442	349.8	.198				
75	12.35	33.02							25.007	296.0	.280				
100	10.87	33.14							25.372	261.2	.350				
125	10.05	33.41							25.724	227.8	.411				
150	9.62	33.69							26.014	200.3	.466				
200	8.81	33.94							26.339	169.4	.560				
250	8.32	34.05							26.501	154.0	.643				
300	7.83	34.09							26.606	144.1	.719				
400	6.44	34.10							26.807	125.0	.859				
500	5.70	34.18							26.964	110.1	.983				
600	5.18	34.26							27.090	98.2	1.094				

RV ALEXANDER AGASSIZ **BUOY BOUNCE EXPEDITION** **STD 13**

LATITUDE 34 02.8N	LONGITUDE 125 29.5W	MO/DAY/YR 09/15/66	MESSENGER 0626	TIME GMT	BOTTOM 4650M	WIND 350	SPEED 19KT	WEATHER 0	DOMINANT WAVES 340 03 06						
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.14	33.12							23.821	409.0	0				
10	18.11	33.12							23.828	408.3	.041				
20	18.04	33.12							23.845	406.7	.082				
30	17.91	33.12							23.877	403.7	.122				
50	14.65	33.05							24.566	338.0	.197				
75	12.35	33.01							25.000	296.7	.276				
100	10.92	33.13							25.356	262.8	.347				
125	10.05	33.36							25.685	231.5	.409				
150	9.66	33.67							25.992	202.4	.464				
200	8.83	33.96							26.352	168.2	.558				
250	8.22	34.06							26.524	151.8	.640				
300	7.62	34.08							26.657	139.2	.716				
400	6.24	34.11							26.841	121.8	.851				
500	5.57	34.19							26.988	107.8	.972				
600	5.12	34.27							27.105	96.7	1.081				

RV ALEXANDER AGASSIZ **BUOY BOUNCE EXPEDITION** **H 3**

LATITUDE 34 04.8N	LONGITUDE 125 25.7W	MO/DAY/YR 09/15/66	MESSENGER 0809	TIME GMT	BOTTOM 4669M	WIND 350	SPEED 15KT	WEATHER 0	DOMINANT WAVES 340 05 06	
Z	T	S	D2	P04	S103	N02	N03	NH4	CHLA	PHAE
0	18.11	33.144	5.60	.37					.03	.01
9	18.12	33.146	5.54	.38					.03	.02
28	18.10	33.142	5.59	.37					.03	
37	18.02	33.144	5.61	.37					.05	.00
50	15.39	33.012	6.16	.40					.06	.02
64	14.07		6.26	.42					.15	.14
88	12.32		6.26	.55					.29	.14
101	10.98		5.59	.98					.07	.03
120	10.59		5.25	1.02					.06	.09
138	9.86		4.31	1.52					.02	.02
164	9.38		3.42	1.92					.00	.10
196	8.62		3.06	2.02					.00	.05
222	8.46		2.08	2.15					.00	.02
267	8.06		2.03	2.49					.00	.12
318	7.13		1.76	2.65					.00	.01
397	6.31		1.23	2.75						
477	5.79		.68	3.16						
557	5.36		.42	3.35						

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 14

LATITUDE 34 02.2N	LONGITUDE 125 27.6W	MO/DAY/YR 09/15/66	MESSINGER 0933	TIME GMT	BOTTOM 4669M	WIND 340	SPEED 17KT	WEATHER 1	DOMINANT WAVES 340 05 06						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
						0	18.09	33.12	23.833	407.9	0				
						10	18.09	33.13	23.841	407.1	.041				
						20	18.09	33.13	23.841	407.1	.082				
						30	17.68	33.11	23.925	399.1	.122				
						50	16.43	32.99	24.566	338.0	.196				
						75	12.31	32.99	24.992	297.4	.276				
						100	11.14	33.17	25.348	265.6	.346				
						125	9.94	33.52	25.820	217.9	.407				
						150	9.43	33.75	26.092	192.9	.459				
						200	8.56	33.96	26.396	164.2	.550				
						250	8.17	34.06	26.532	151.1	.631				
						300	7.53	34.08	26.641	140.7	.706				
						400	6.34	34.09	26.812	124.5	.844				
						500	5.66	34.16	26.953	111.1	.968				
						600	5.20	34.26	27.087	98.4	1.079				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 15

LATITUDE 34 02.8N	LONGITUDE 125 29.5W	MO/DAY/YR 09/15/66	MESSINGER 1531	TIME GMT	BOTTOM 4669M	WIND 330	SPEED 12KT	WEATHER 1	DOMINANT WAVES 340 03 03						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
						0	18.07	33.14	23.853	405.9	0				
						10	18.07	33.16	23.853	405.9	.041				
						20	18.08	33.19	23.858	405.5	.081				
						30	17.80	33.14	23.919	399.7	.122				
						50	15.20	33.03	24.432	350.8	.197				
						75	12.65	32.96	24.903	305.9	.279				
						100	11.30	33.15	25.303	267.8	.352				
						125	10.20	33.38	25.675	232.5	.415				
						150	9.70	33.69	26.001	201.5	.470				
						200	8.81	33.93	26.331	170.1	.564				
						250	8.33	34.05	26.500	154.2	.647				
						300	7.73	34.09	26.620	142.7	.724				
						400	6.37	34.11	26.824	123.4	.862				
						500	5.68	34.19	26.974	109.1	.984				
						600	5.21	34.26	27.086	98.5	1.095				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 16

LATITUDE 34 02.8N	LONGITUDE 125 29.5W	MO/DAY/YR 09/15/66	MESSINGER 1830	TIME GMT	BOTTOM 4669M	WIND 340	SPEED 19KT	WEATHER 1	DOMINANT WAVES 340 04 06						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
						0	18.13	33.16	23.854	405.9	0				
						10	18.12	33.16	23.856	405.7	.041				
						20	18.11	33.16	23.859	405.4	.081				
						30	18.09	33.16	23.864	405.0	.122				
						50	16.12	32.98	24.189	373.9	.200				
						75	13.45	32.98	24.761	319.5	.287				
						100	11.60	33.13	25.233	276.5	.362				
						125	10.40	33.30	25.565	242.9	.427				
						150	9.81	33.60	25.912	209.9	.486				
						200	8.77	33.93	26.330	169.5	.581				
						250	8.24	34.05	26.513	152.9	.663				
						300	7.63	34.09	26.635	141.3	.739				
						400	6.32	34.11	26.830	122.8	.877				
						500	5.60	34.19	26.984	100.2	.998				
						600	5.10	34.28	27.115	93.0	1.106				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

H 4

LATITUDE 34 00.7N	LONGITUDE 125 28.6W	MO/DAY/YR 09/15/66	MESSINGER 2030	TIME GMT	BOTTOM 4673M	WIND 330	SPEED 14KT	WEATHER 1	DOMINANT WAVES 350 06 06	
Z	T	S	02	P04	S103	N02	N03	NN4	CHLA	PHAE
1	18.22	31.153	5.57	.35					.01	.02
10	18.21	31.153	5.59	.35					.03	.01
26	18.12	31.149	5.62	.35					.04	.01
35	17.70	31.009	5.76	.36					.06	.01
46	15.20	32.984	6.21	.40					.15	.02
59	14.41		6.27	.40					.28	.12
79	12.00		6.19	.55					.32	.12
95	11.90		5.94	.66					.42	.13
109	11.12		5.61	.87					.10	.04
126	10.32		4.82	1.29					.04	.04
145	9.63		4.56	1.35					.02	.04
171	9.25		3.46	1.91					.01	.02
194	8.90		3.11	2.03					.00	.02
232	8.27		2.95	2.14					.00	.02
277	7.96		1.99	2.91					.00	.02
340	6.84		1.83	2.66					.00	.01
422	6.18		1.04	2.99						
500	5.62		.72	3.22						

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 17

LATITUDE 34 04.3N		LONGITUDE 125 27.0W		MO/DAY/YR 09/15/66		MESSENGER TIME 2139		BOTTOM GMT		WIND 330	SPEED 14KT	WEATHER	DOMINANT WAVES 350 06 06		
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
						0	18.23	33.15	23.822	409.0	0				
						10	18.15	33.14	23.834	407.8	.061				
						20	18.10	33.15	23.853	405.9	.082				
						30	17.83	33.08	23.866	404.8	.122				
						50	15.15	33.00	24.420	351.9	.198				
						75	12.32	32.95	26.959	300.6	.280				
						100	11.29	33.09	25.259	272.1	.352				
						125	10.30	33.33	25.619	237.8	.416				
						150	9.65	33.70	26.017	200.0	.472				
						200	8.75	33.95	26.357	167.7	.565				
						250	8.16	34.06	26.533	151.0	.647				
						300	7.50	34.08	26.646	140.3	.722				
						400	6.37	34.10	26.816	126.1	.860				
						500	5.70	34.18	26.964	110.1	.983				
						600	5.25	34.25	27.074	99.7	1.094				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 18

LATITUDE 34 02.3N		LONGITUDE 125 29.5W		MO/DAY/YR 09/16/66		MESSENGER TIME 0212		BOTTOM GMT		WIND 4669M	SPEED 340	WEATHER	DOMINANT WAVES 340 04		
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
						0	18.22	33.12	23.801	410.9	0				
						10	18.19	33.13	23.816	409.5	.061				
						20	18.12	33.14	23.841	407.1	.082				
						30	17.90	33.13	23.887	402.7	.122				
						50	16.40	33.02	24.596	335.2	.196				
						75	12.39	33.02	25.000	296.7	.276				
						100	11.05	33.15	25.348	263.5	.346				
						125	10.19	33.35	25.653	234.5	.409				
						150	9.64	33.68	26.003	201.3	.464				
						200	8.68	33.95	26.367	166.7	.558				
						250	8.14	34.05	26.528	151.4	.640				
						300	7.60	34.09	26.639	140.9	.715				
						400	6.29	34.11	26.839	121.9	.852				
						500	5.65	34.18	26.970	109.5	.978				
						600	5.20	34.26	27.087	98.4	1.084				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 19

LATITUDE 34 02.8N		LONGITUDE 125 29.5W		MO/DAY/YR 09/16/66		MESSENGER TIME 0327		BOTTOM GMT		WIND 4669M	SPEED 340	WEATHER	DOMINANT WAVES 340 03		
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
						0	18.18	33.12	23.811	410.0	0				
						10	18.18	33.13	23.819	409.2	.061				
						20	18.14	33.13	23.828	408.3	.082				
						30	17.25	33.11	24.027	389.3	.122				
						50	15.00	33.03	24.475	346.6	.196				
						75	12.56	32.99	24.944	302.0	.277				
						100	11.25	33.17	25.328	265.5	.349				
						125	10.24	33.37	25.660	233.8	.412				
						150	9.58	33.70	26.028	198.9	.466				
						200	8.83	33.94	26.336	169.7	.560				
						250	8.24	34.05	26.513	152.9	.643				
						300	7.60	34.08	26.631	141.7	.719				
						400	6.35	34.11	26.826	123.1	.856				
						500	5.60	34.20	26.992	107.4	.978				
						600	5.14	34.27	27.102	97.0	1.086				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 20

LATITUDE 34 02.5N		LONGITUDE 125 29.5W		MO/DAY/YR 09/16/66		MESSENGER TIME 1803		BOTTOM GMT		WIND	SPEED	WEATHER	DOMINANT WAVES		
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
						0	18.05	33.07	23.805	410.6	0				
						10	18.05	33.07	23.805	410.6	.061				
						20	18.05	33.07	23.805	410.6	.082				
						30	17.50	33.04	23.916	600.1	.123				
						50	16.15	32.99	24.190	373.8	.200				
						75	12.55	32.98	24.938	302.6	.285				
						100	11.68	33.23	25.294	268.5	.357				
						125	10.15	33.29	25.614	238.3	.421				
						150	9.63	33.57	25.997	201.9	.477				
						200	8.84	33.95	26.342	169.1	.571				
						250	8.09	34.02	26.512	152.9	.654				
						300	7.60	34.09	26.639	140.9	.730				
						400	6.25	34.10	26.832	122.6	.867				
						500	5.62	34.17	26.966	109.9	.989				
						600	5.16	34.26	27.092	97.9	1.099				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 21

LATITUDE 34 02.6N	LONGITUDE 125 29.5W	MO/DAY/YR 09/16/66	MESSINGER 2020	TIME GMT	BOTTOM 4669M	WIND 360	SPEED 15KT	WEATHER 2	DOMINANT WAVES 350 07 06						
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
						0	18.10	33.13	23.838	407.4	0				
						10	18.09	33.13	23.841	407.1	.041				
						20	18.08	33.13	23.843	406.9	.081				
						30	18.06	33.12	23.840	407.2	.122				
						50	15.82	32.99	24.264	366.7	.200				
						75	13.15	33.02	24.852	310.8	.285				
						100	11.89	33.14	25.187	276.9	.359				
						125	10.02	33.22	25.581	241.4	.425				
						150	9.83	33.57	25.885	212.5	.482				
						200	8.87	33.95	26.338	169.5	.579				
						250	8.17	34.04	26.516	152.6	.662				
						300	7.65	34.10	26.640	140.9	.738				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

H 5

LATITUDE 34 02.6N	LONGITUDE 125 29.5W	MO/DAY/YR 09/16/66	MESSINGER 2104 2120 GMT	TIME GMT	BOTTOM 4669M	WIND 360	SPEED 15KT	WEATHER 2	DOMINANT WAVES 350 07 06	
Z	T	S	D2	P04	S103	N02	N03	NH4	CHLA	PHAE
0A 18.10	33.066	5.62	.37						.05	.00
10 18.08	33.067	5.60	.36						.04	.01
25 18.09	33.112	5.66	.34						.06	.00
39 17.22	33.022	5.80	.35						.08	.01
49 15.76	33.009	6.12	.37						.12	.02
59 14.72		6.30	.37						.12	.05
64 14.24		6.31	.38						.17	.01
67 14.20		6.35	.38						.24	.03
70 14.00		6.32	.42						.37	.00
73 13.40		6.24	.50						.40	.07
76 13.28		6.20	.57						.39	.10
77B 12.87		6.32	.43						.27	.12
81B 12.33		6.25	.46						.27	.06
86B 12.10		6.20	.50						.23	.03
97B 11.92		5.96	.59						.16	.06
110B 11.38		5.58	.74						.10	.03
131B 10.00		4.62	1.43						.03	.03
150B 9.68		4.44	1.45						.03	.02

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 22

LATITUDE 34 03.0N	LONGITUDE 125 29.0W	MO/DAY/YR 09/17/66	MESSINGER 0342	TIME GMT	BOTTOM 4688M	WIND 330	SPEED 15KT	WEATHER 0	DOMINANT WAVES 350 03						
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
						0	18.09	33.03	23.764	414.4	0				
						10	18.09	33.04	23.772	413.7	.041				
						20	18.09	33.04	23.772	413.7	.083				
						30	17.25	33.05	23.981	393.7	.123				
						50	14.20	32.99	24.615	333.4	.196				
						75	12.18	33.03	25.047	292.2	.275				
						100	11.63	33.24	25.313	266.9	.345				
						125	10.00	33.29	25.639	235.9	.409				
						150	9.63	33.67	25.997	201.9	.464				
						200	8.90	33.94	26.325	170.7	.559				
						250	8.17	34.03	26.508	153.3	.642				
						300	7.65	34.09	26.632	141.6	.718				
						400	6.36	34.10	26.817	124.0	.856				
						500	5.62	34.17	26.966	109.9	.979				
						600	5.24	34.26	27.003	98.8	1.090				

A) SPECIAL CAST TO STUDY THE OXYGEN AND CHLOROPHYLL MAXIMA.
 B) CAST II.

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

H 6

LATITUDE 34 04.0N	LONGITUDE 125 28.5W	MO/DAY/YR 09/17/66	MESSANGER TIME 0831 GMT	BOTTOM 4669M	WIND 350	SPEED 15KT	WEATHER 5	DOMINANT WAVES 340 06 07		
Z	T	S	D2	P04	S103	N02	N03	NH4	CHLA	PHAE
0	18.13	33.059	5.62	.37					.05	.01
10	18.14	33.058	5.60	.35					.05	.00
34	17.66	33.036	5.74	.35					.05	.01
43	16.48	33.043	6.00	.34					.08	.02
57	14.44	32.989	6.26	.35					.09	.02
71	12.86		6.34	.46					.22	.09
94	11.88		5.95	.57					.13	.08
112	10.88		5.37	.94					.06	.05
130	10.02		4.59	1.40					.03	.03
158	9.47		4.19	1.55					.02	.02
165	8.98		3.15	1.97					.00	.01
221	8.48		2.97	2.09					.00	.01
249	8.17		2.53	2.25					.00	.01
294	7.43		1.90	2.58					.00	.01
354	6.60		1.74	2.69					.00	.01
448	5.88		.78	3.10					.00	.01
535	5.35		.42	3.26					.00	.01
610	5.02		.35	3.35						

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 23

LATITUDE 34 04.0N	LONGITUDE 125 28.5W	MO/DAY/YR 09/17/66	MESSANGER TIME 0937	BOTTOM 4669M	WIND 350	SPEED 15KT	WEATHER 5	DOMINANT WAVES 340 06 07							
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.13	33.07							23.785	412.4	0				
10	18.13	33.07							23.785	412.4	.041				
20	18.13	33.07							23.785	412.4	.083				
30	17.89	33.07							23.844	406.9	.124				
50	15.15	32.96							24.389	354.8	.200				
75	12.92	32.93							24.827	313.1	.284				
100	11.80	33.11							25.181	279.5	.358				
125	10.42	33.29							25.567	242.7	.424				
150	9.75	33.62							25.938	207.5	.481				
200	8.90	33.91							26.302	172.9	.578				
250	8.14	33.99							26.481	155.9	.662				
300	7.67	34.08							26.621	142.6	.739				
400	6.31	34.09							26.816	124.1	.878				
500	5.68	34.17							26.959	110.6	1.001				
600	5.22	34.25							27.077	99.4	1.113				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 24

LATITUDE 34 04.0N	LONGITUDE 125 28.5W	MO/DAY/YR 09/17/66	MESSANGER TIME 1251	BOTTOM 4574M	WIND 340	SPEED 09KT	WEATHER	DOMINANT WAVES							
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.02	33.08							23.820	409.2	0				
10	18.02	33.08							23.820	409.2	.041				
20	18.02	33.08							23.820	409.2	.082				
30	18.02	33.08							23.820	409.2	.123				
50	16.95	33.01							24.556	338.9	.198				
75	12.84	32.95							24.859	310.1	.279				
100	11.55	33.10							25.219	275.8	.353				
125	10.42	33.29							25.567	242.7	.419				
150	9.78	33.61							25.925	208.7	.476				
200	8.75	33.95							26.357	167.7	.572				
250	8.22	34.05							26.516	152.6	.654				
300	7.65	34.09							26.632	141.6	.729				
400	6.41	34.10							26.811	124.6	.868				
500	5.65	34.17							26.962	110.2	.991				
600	5.23	34.25							27.076	99.5	1.103				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 25

LATITUDE 34 03.0N	LONGITUDE 125 27.2W	MO/DAY/YR 09/18/66	MESSANGER TIME 0422	BOTTOM 4665M	WIND 290	SPEED 11KT	WEATHER	DOMINANT WAVES							
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.97	33.07							23.726	410.1	0				
10	18.36	33.07							23.729	417.0	.042				
20	18.30	33.08							23.751	415.7	.084				
30	17.45	33.02							23.911	400.4	.124				
50	16.78	33.02							24.515	342.8	.199				
75	12.43	32.99							24.966	299.6	.280				
100	11.50	33.17							25.282	269.0	.351				
125	10.20	33.31							25.621	237.6	.415				
150	9.59	33.60							26.011	200.5	.471				
200	8.80	33.96							26.341	169.2	.565				
250	8.28	34.04							26.499	154.2	.648				
300	7.69	34.09							26.626	142.1	.724				
400	6.39	34.10							26.813	124.4	.863				
500	5.70	34.18							26.984	110.1	.986				
600	5.25	34.26							27.082	98.9	1.097				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 26

LATITUDE 34 03.0N		LONGITUDE 125 27.0W		MO/DAY/YR 09/18/66	MESSINGER 0706	TIME GMT	BOTTOM 4669M	WIND 290	SPEED 12KT	WEATHER 2	DOMINANT WAVES 330 05 07				
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.36	33.08							23.736	617.1	0				
10	18.36	33.08							23.736	617.1	.042				
20	18.29	33.07							23.746	616.2	.083				
30	17.92	33.03							23.806	610.5	.125				
50	15.31	32.96							24.354	358.2	.202				
75	12.90A	32.97							24.862	309.8	.286				
100	11.45	33.12							25.253	272.6	.359				
125	10.30	33.32							25.611	238.5	.424				
150	9.73	33.62							25.941	207.2	.480				
200	8.85	33.92							26.317	171.4	.576				
250	8.15	34.00							26.488	155.3	.660				
300	7.69	34.09							26.626	142.1	.737				
400	6.35	34.10							26.819	123.9	.875				
500	5.64	34.18							26.971	109.4	.998				
600	5.21	34.26							27.086	98.5	1.108				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

H 7

LATITUDE 34 03.0N		LONGITUDE 125 27.0W		MO/DAY/YR 09/18/66	MESSINGER 0821	TIME GMT	BOTTOM 4669M	WIND 290	SPEED 12KT	WEATHER 2	DOMINANT WAVES 330 05 07	
Z	T	S	D2	P04	S103	N02	N03	NH4	CHLA	PHAE		
0	18.37	33.071	5.57	.36					.04	.00		
10	18.36	33.073	5.77	.37					.04	.00		
34	17.64	33.020	5.86	.37					.09	.01		
44	16.22	32.939	6.10	.37					.09	.02		
58	14.55	32.998	6.27	.37					.10	.02		
73	13.00		6.29	.53					.30	.10		
97	11.70		6.04	.61					.14	.06		
117	11.15		5.61	.77					.07	.07		
135	9.98		4.95	1.42					.03	.02		
164	9.30		3.84	1.77					.01	.01		
192	8.80		3.02	2.06					.00	.01		
231	8.30		2.80	2.10					.00	.01		
259	7.96		2.10	2.43					.00	.01		
307	7.20		1.86	2.61					.00	.01		
370	6.46		1.38	2.88					.00	.01		
465	5.70		.74	3.15					.00	.01		
556	5.30		.40	3.29					.00	.01		
631	4.94		.33	3.30								

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 27

LATITUDE 34 03.0N		LONGITUDE 125 26.1W		MO/DAY/YR 09/18/66	MESSINGER 1025	TIME GMT	BOTTOM 4669M	WIND 280	SPEED 12KT	WEATHER 5	DOMINANT WAVES 330 05 07				
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	18.38	33.05							23.709	419.7	0				
10	18.38	33.06							23.716	419.0	.042				
20	18.31	33.06							23.733	417.4	.084				
30	17.30	33.09							23.970	394.8	.125				
50	14.90	32.99							24.466	347.5	.199				
75	12.78	32.95							24.870	309.0	.281				
100	11.50	33.11							25.236	274.2	.355				
125	10.85	33.29							25.492	249.8	.421				
150	9.72	33.62							25.943	207.0	.479				
200	8.79	33.95							26.350	168.3	.574				
250	8.18	34.04							26.514	152.7	.657				
300	7.64	34.09							26.633	141.5	.732				
400	6.26	34.10							26.830	122.8	.870				
500	5.68	34.18							26.967	109.8	.992				
600	5.21	34.26							27.086	98.5	1.108				

AI TEMPERATURE INFERRED BY COMPARISON WITH ADJACENT STATIONS.

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 28

LATITUDE 34 01.5N	LONGITUDE 125 28.5W	MO/DAY/YR 09/18/66	MESSENDER 1403	TIME GMT	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES							
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD	
						0	18.36	33.05		23.713	419.3		0			
						10	18.37	33.05		23.711	419.5	.042				
						20	18.30	33.06		23.736	417.1	.084				
						30	17.30	33.01		23.939	397.8	.125				
						50	15.42	32.97		26.338	359.7	.201				
						75	12.53	32.96		26.927	303.7	.284				
						100	11.49	33.11		25.238	274.0	.357				
						125	10.75	33.30		25.518	247.4	.422				
						150	9.85	33.54		25.859	215.0	.481				
						200	8.99	33.88		26.264	176.5	.581				
						250	8.20	34.00		26.480	156.0	.666				
						300	7.88	34.08		26.590	145.5	.743				
						400	6.53	34.09		26.787	126.9	.885				
						500	5.80	34.16		26.936	112.8	1.011				
						600	5.28	34.28		27.094	97.8	1.123				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 29

LATITUDE 34 00.0N	LONGITUDE 125 27.4W	MO/DAY/YR 09/18/66	MESSENDER 1703	TIME GMT	BOTTOM 4665M	WIND 350	SPEED 19KT	WEATHER	DOMINANT WAVES							
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD	
						0	18.38	33.06		23.716	419.0	0				
						10	18.38	33.06		23.716	419.0	.042				
						20	18.32	33.07		23.726	418.1	.084				
						30	18.32	33.06		23.731	417.6	.126				
						50	15.65	32.97		24.287	364.6	.204				
						75	12.70	32.96		24.894	306.8	.288				
						100	11.54	33.09		25.213	276.4	.362				
						125	10.54	33.32		25.570	242.6	.427				
						150	9.85	33.56		25.874	213.5	.485				
						200	8.83	33.93		26.328	170.4	.583				
						250	8.12	34.02		26.508	153.4	.666				
						300	7.84	34.07		26.618	142.9	.742				
						400	6.35	34.10		26.819	123.9	.881				
						500	5.68	34.18		26.967	109.8	1.003				
						600	5.19	34.26		27.089	98.3	1.114				

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 30

LATITUDE 33 58.5N	LONGITUDE 125 25.5W	MO/DAY/YR 09/18/66	MESSENDER 1953	TIME GMT	BOTTOM 4631M	WIND 330	SPEED 23KT	WEATHER	DOMINANT WAVES							
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD	
						0	18.46	33.08		23.712	419.4	0				
						10	18.43	33.08		23.719	418.7	.042				
						20	18.42	33.08		23.722	418.5	.084				
						30	17.35	33.05		23.958	396.0	.125				
						50	14.65	32.98		24.512	343.1	.199				
						75	12.50A	33.00		24.963	300.2	.280				
						100	11.71	33.14		25.221	275.7	.352				
						125	10.10	33.42		25.723	227.9	.416				
						150	9.45	33.70		26.049	196.9	.469				
						200	8.55	33.96		26.395	164.0	.561				
						250	6.08	34.02		26.514	152.8	.642				
						300	7.70	34.08		26.617	143.0	.719				
						400	6.39	34.10		26.813	124.4	.858				
						500	5.57	34.18		26.980	108.6	.980				
						600	5.16	34.26		27.092	97.9	1.090				

AB TEMPERATURE INFERRED BY COMPARISON WITH ADJACENT STATIONS.

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

H 8

	LATITUDE 33 58.5N	LONGITUDE 125 25.5W	MO/DAY/YR 09/18/66	MESSINGER TIME 2042 GMT	BOTTOM 4631M	WIND 330	SPEED 23KT	WEATHER 1	DOMINANT WAVES 330 10 07	
Z	T	S	O2	P04	S103	N02	N03	NH6	CHLA	PHAE
1	18.47	33.074	5.61	.35					.04	.00
9	18.44	33.073	5.58	.37					.05	.00
29	18.03	33.082	5.73	.36					.06	.00
37	16.95	33.005	5.87	.36					.08	.00
43	14.93	33.006	6.30	.38					.13	.02
61	13.53		6.36	.43					.27	.05
80	12.07		6.17	.47					.18	.09
94	11.70		5.97	.59					.12	.07
109	11.16		5.51	.82					.08	.05
132	9.97		4.52	1.47					.02	.02
153	9.57		4.40	1.46U						
181	8.94		3.16U	2.01U					.00	.01
204	8.57		3.16	2.02					.00	.01
241	8.05		2.77	2.20					.00	.01
290	7.63		1.99	2.52					.00	.01
370	6.50		1.50	2.82					.00	.01
447	5.90		.99	3.03						
514	5.44		.56	3.23						

RV ALEXANDER AGASSIZ

BUOY BOUNCE EXPEDITION

STD 31

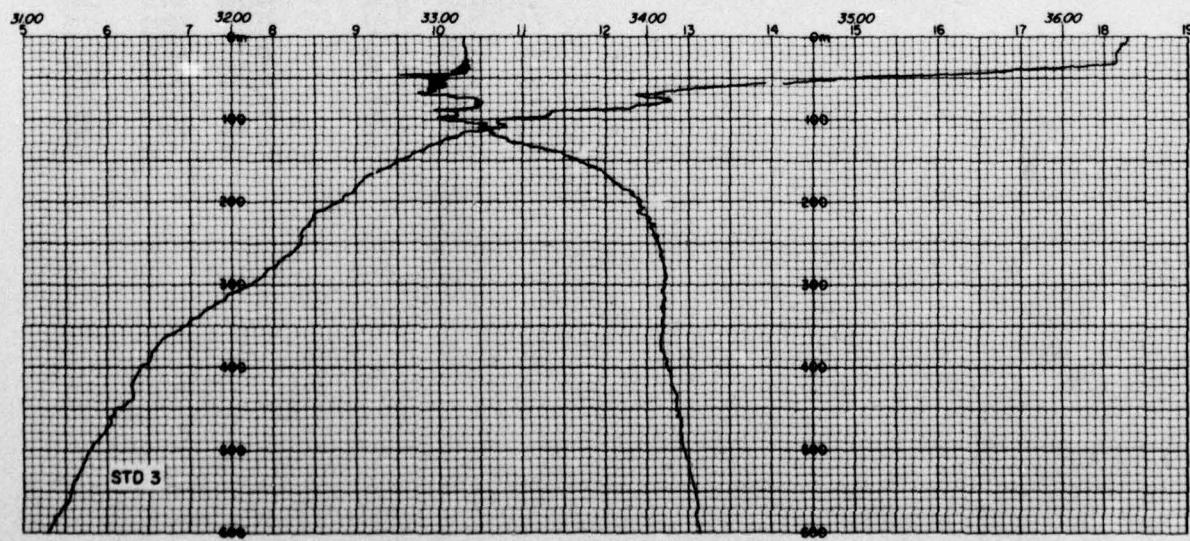
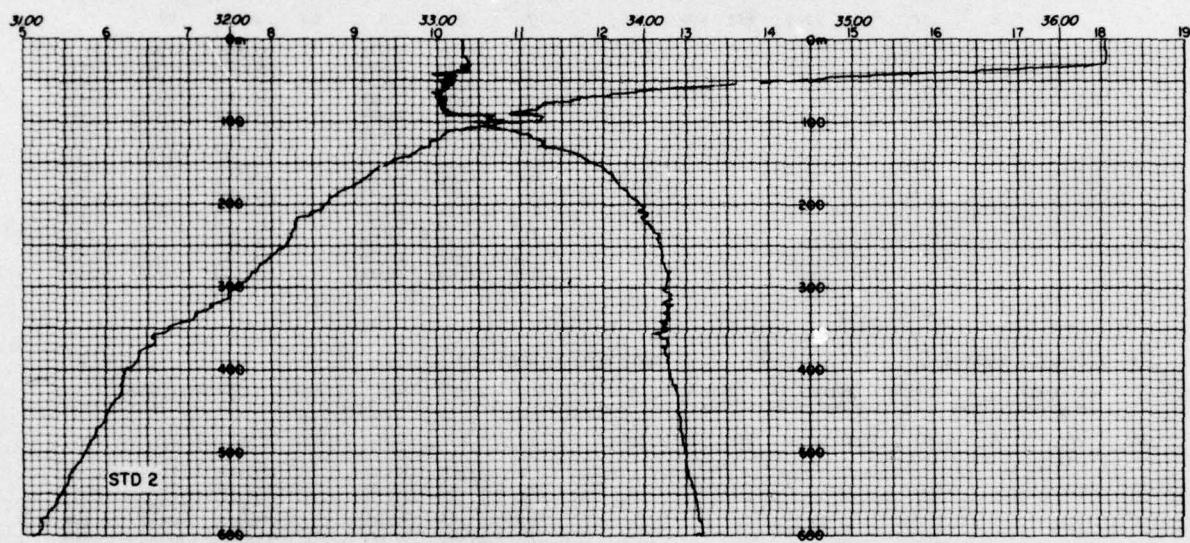
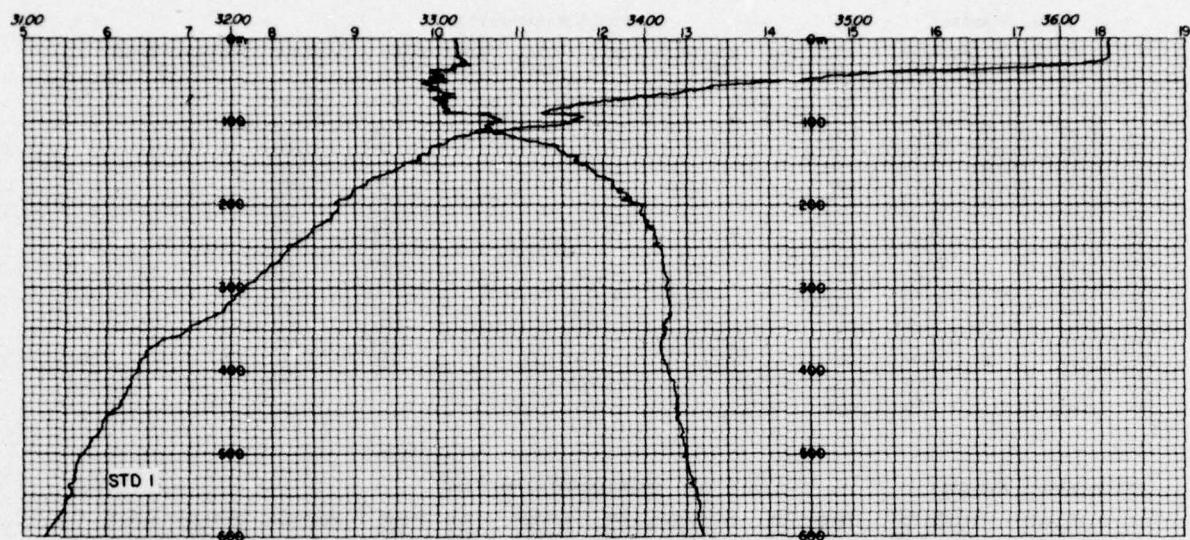
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Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
0									0	18.54	33.09		23.699	420.6	0
10									10	18.54	33.09		23.699	420.6	.042
20									20	18.30	33.09		23.759	415.0	.084
30									30	16.98	33.05		24.045	387.7	.124
50									50	13.74	33.00		24.717	323.6	.195
75									75	12.65	33.10		25.012	295.6	.273
100									100	11.73	33.22		25.279	270.1	.344
125									125	10.34	33.33		25.612	238.4	.409
150									150	9.70	33.63		25.954	206.0	.465
200									200	8.84	33.93		26.327	170.6	.561
250									250	8.04	34.00		26.504	153.7	.644
300									300	7.60	34.07		26.623	142.4	.720
400									400	6.19	34.09		26.831	122.7	.858
500									500	5.55	34.18		26.982	108.3	.979
600									600	5.15	34.26		27.093	97.8	1.089

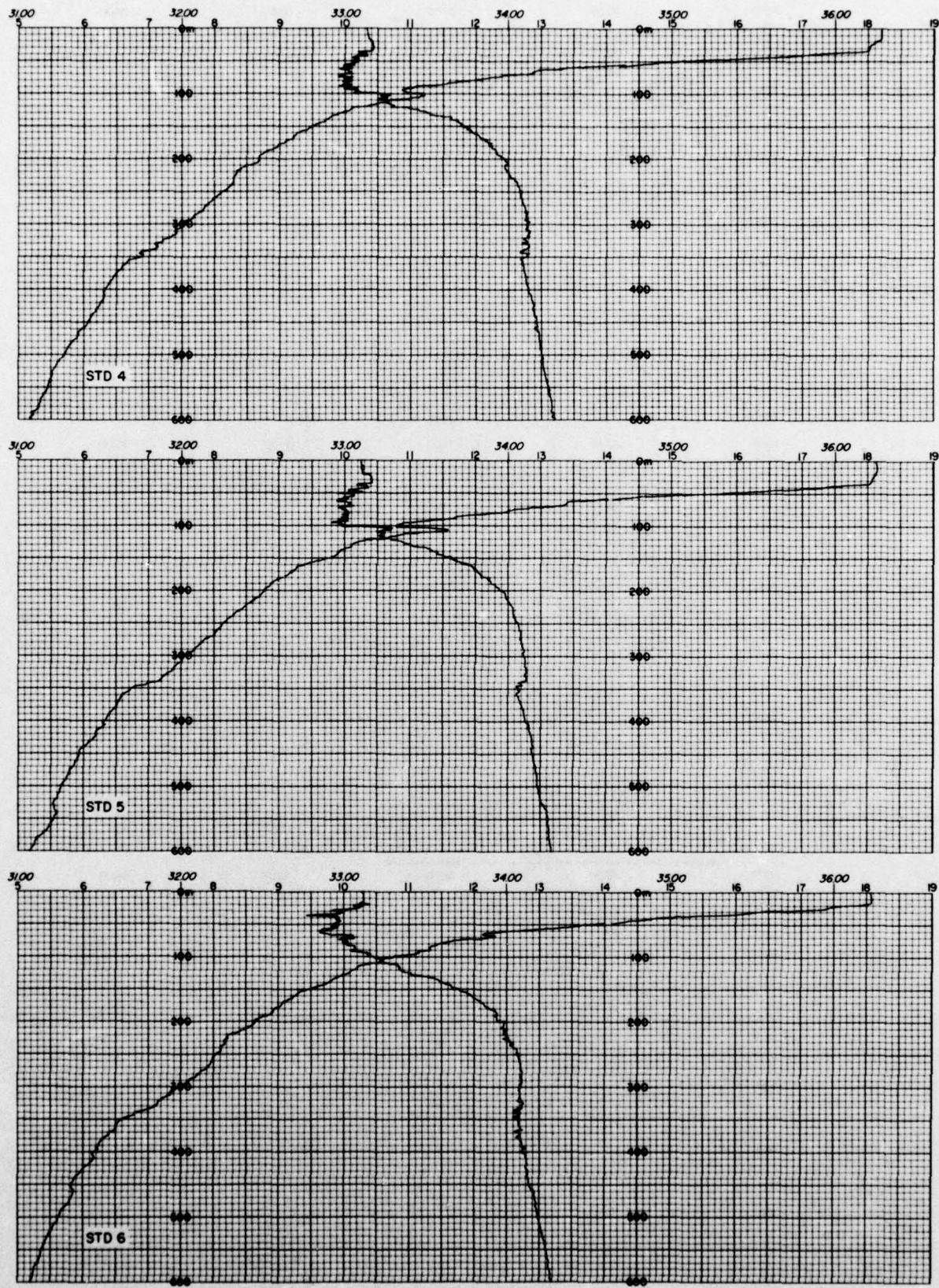
RV ALEXANDER AGASSIZ

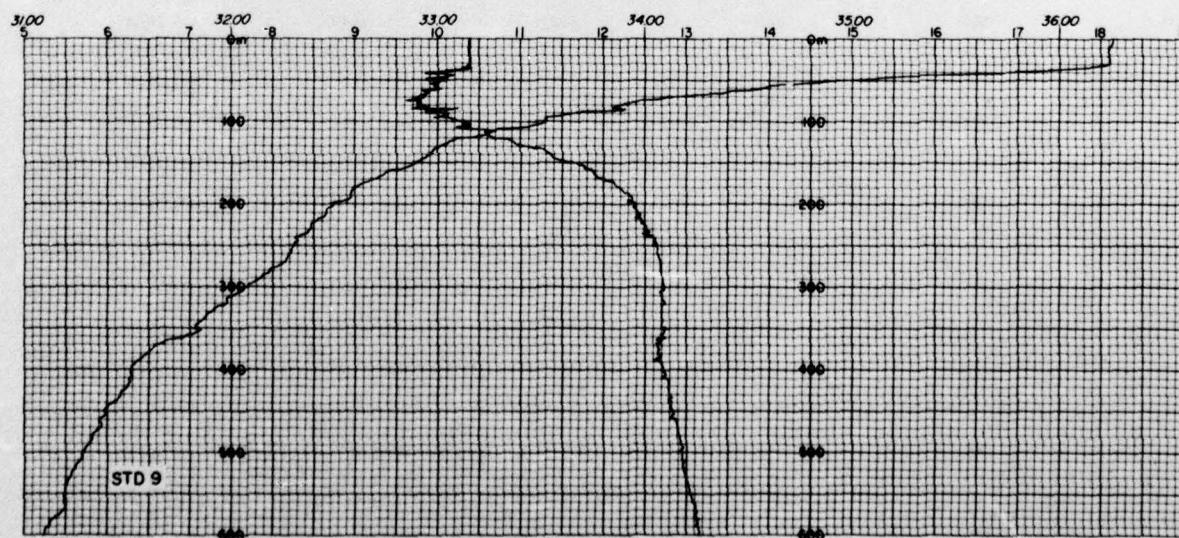
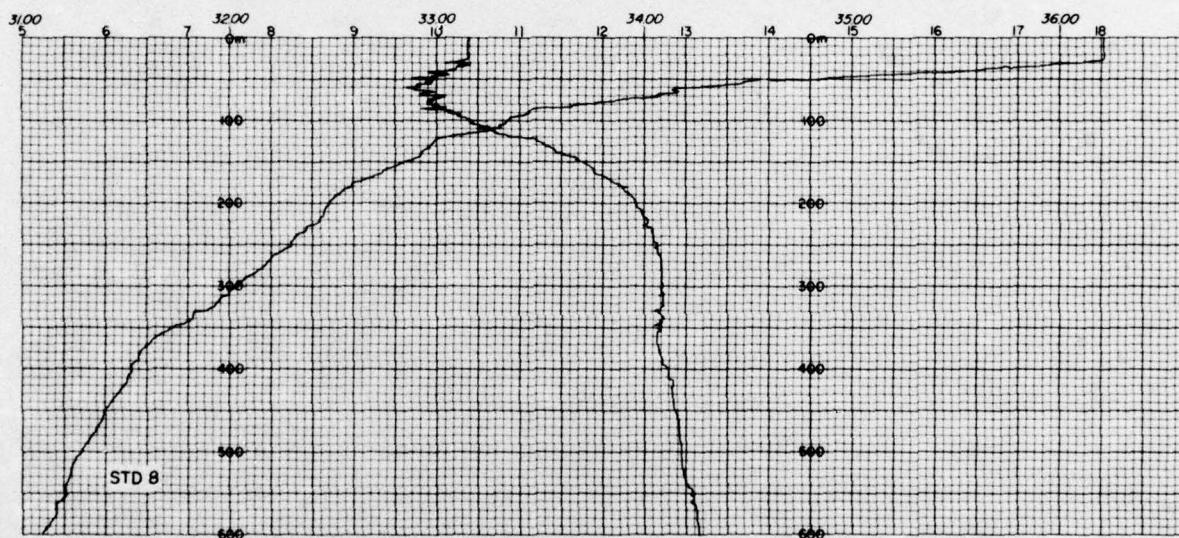
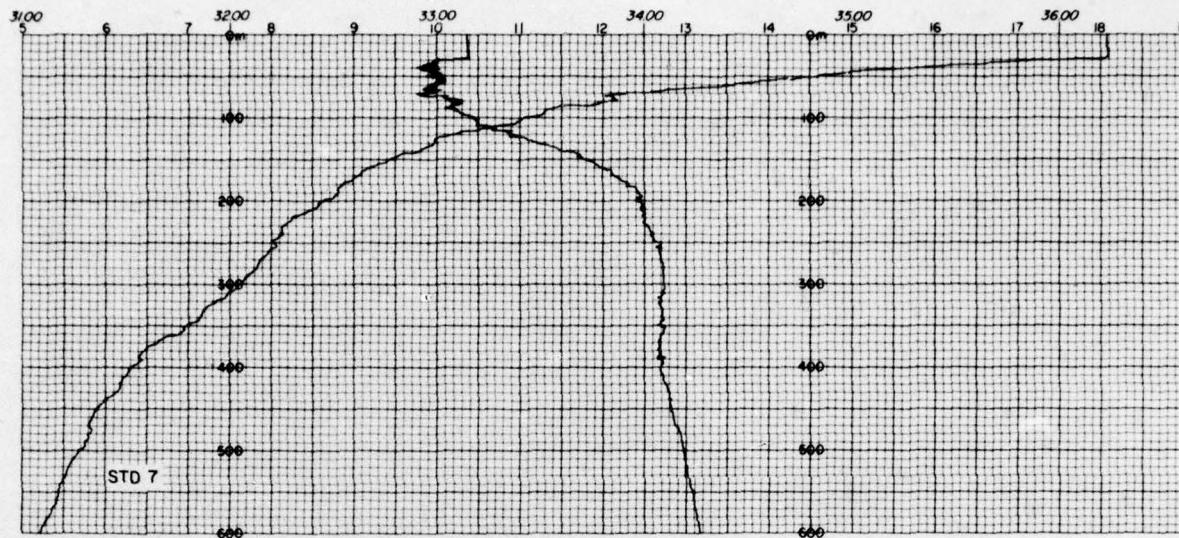
BUOY BOUNCE EXPEDITION

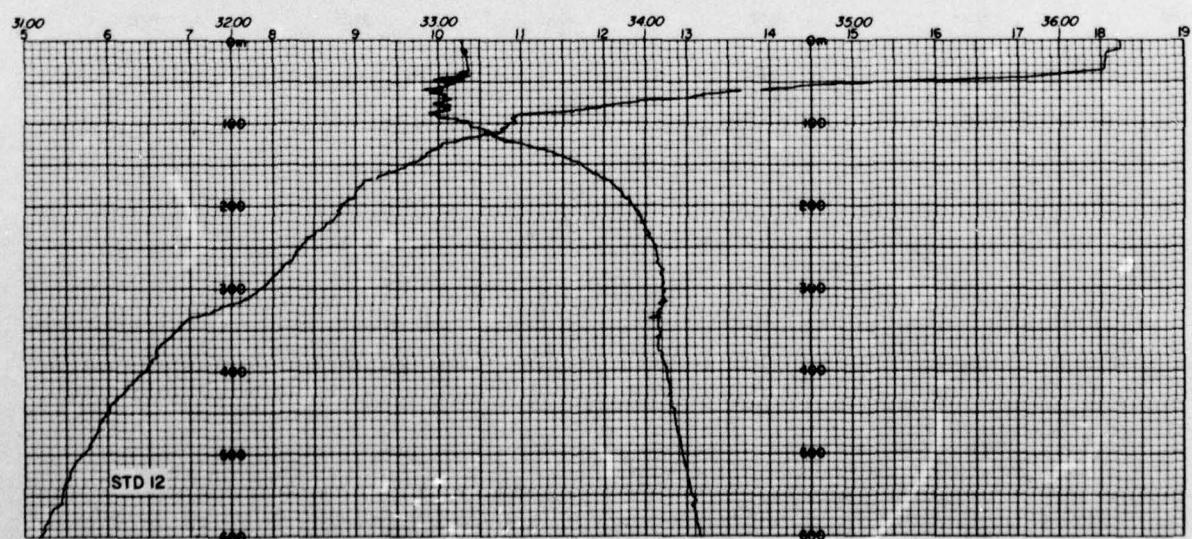
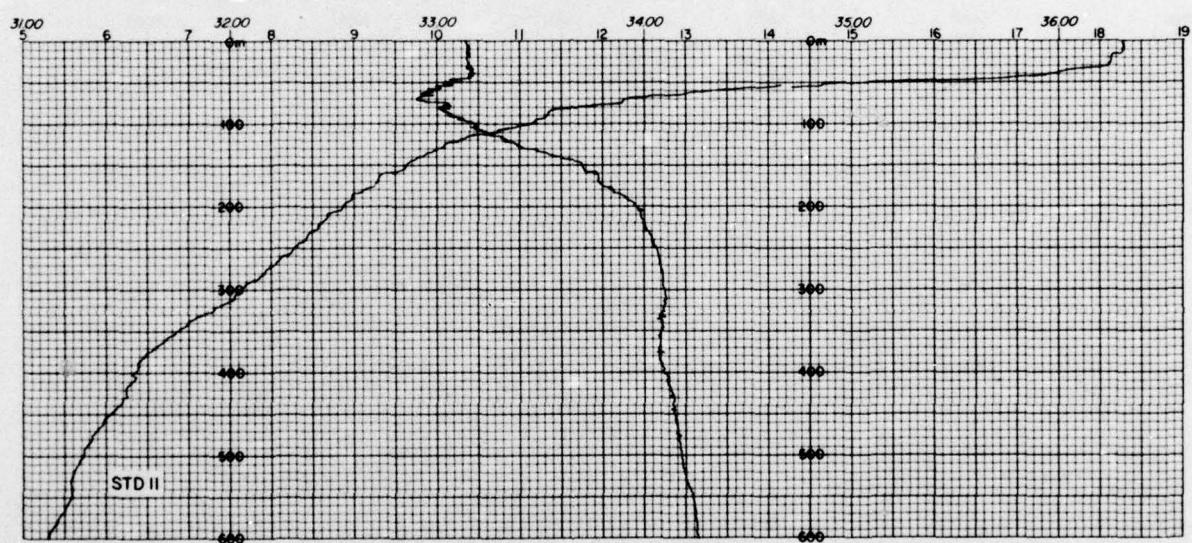
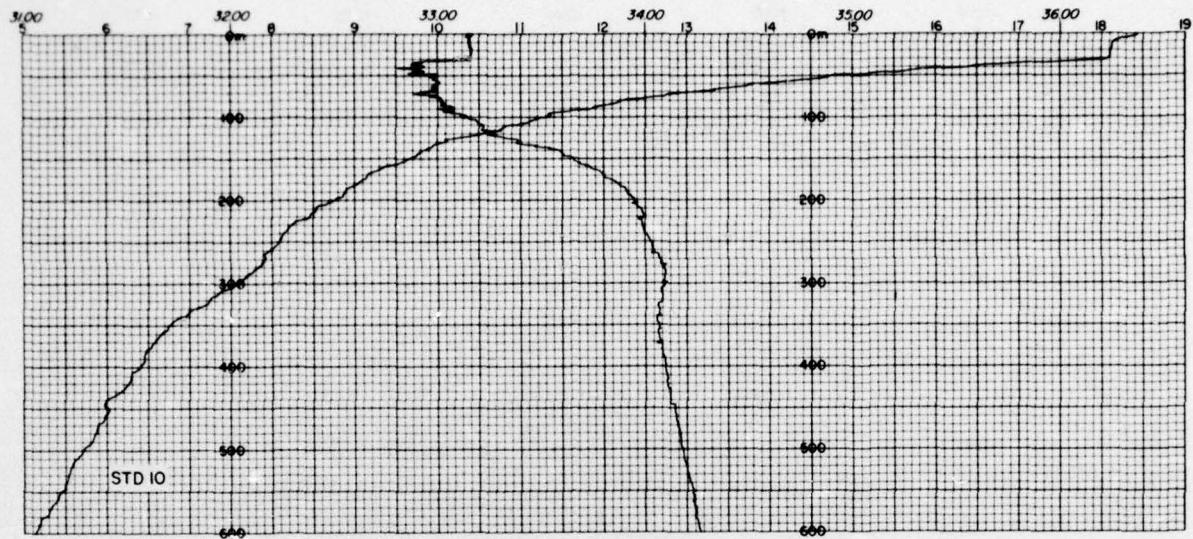
STD 32

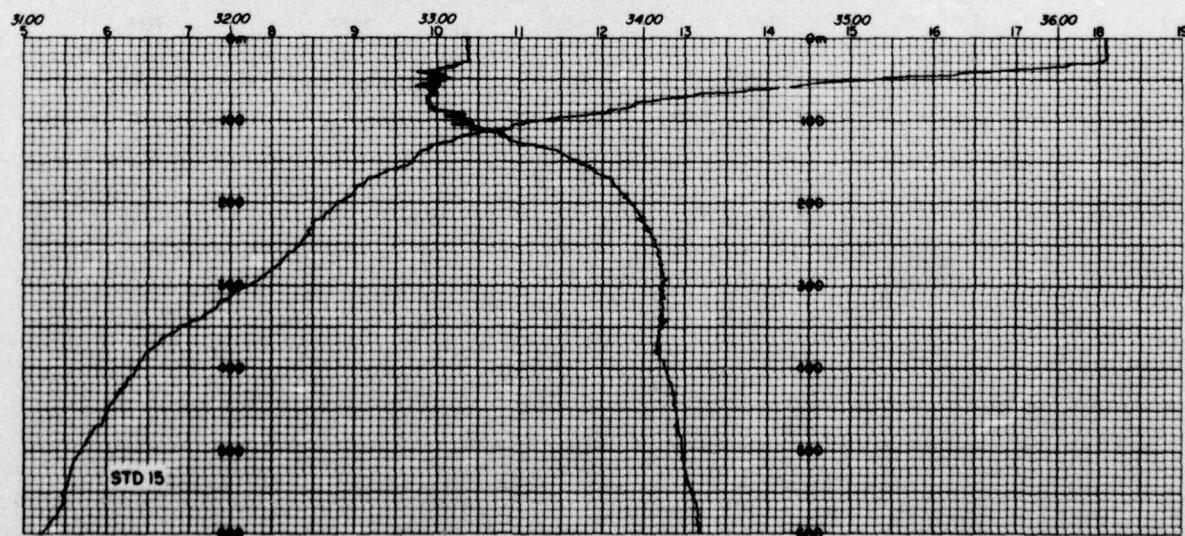
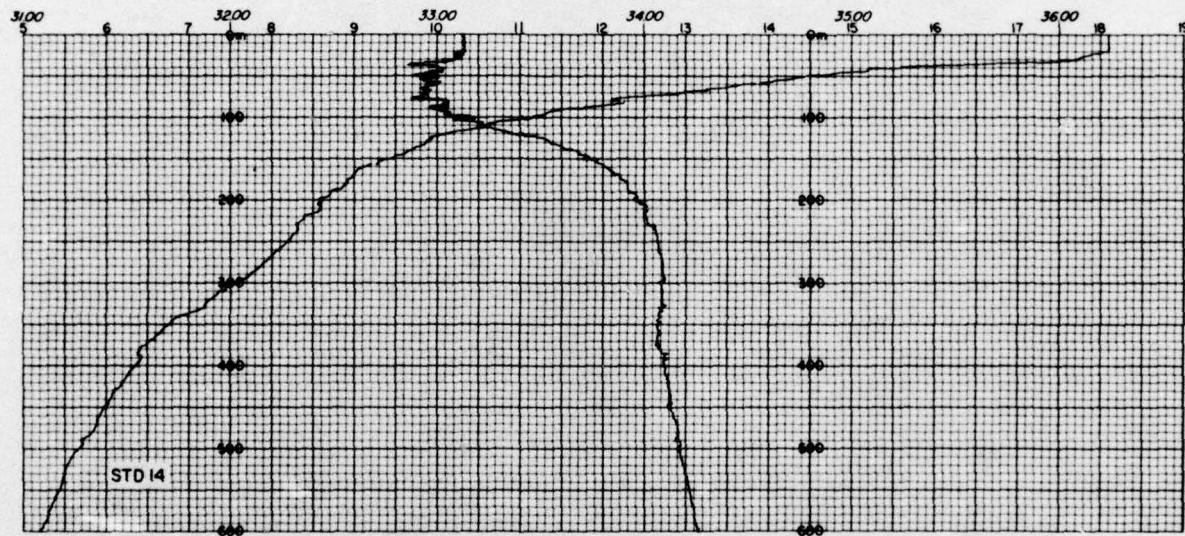
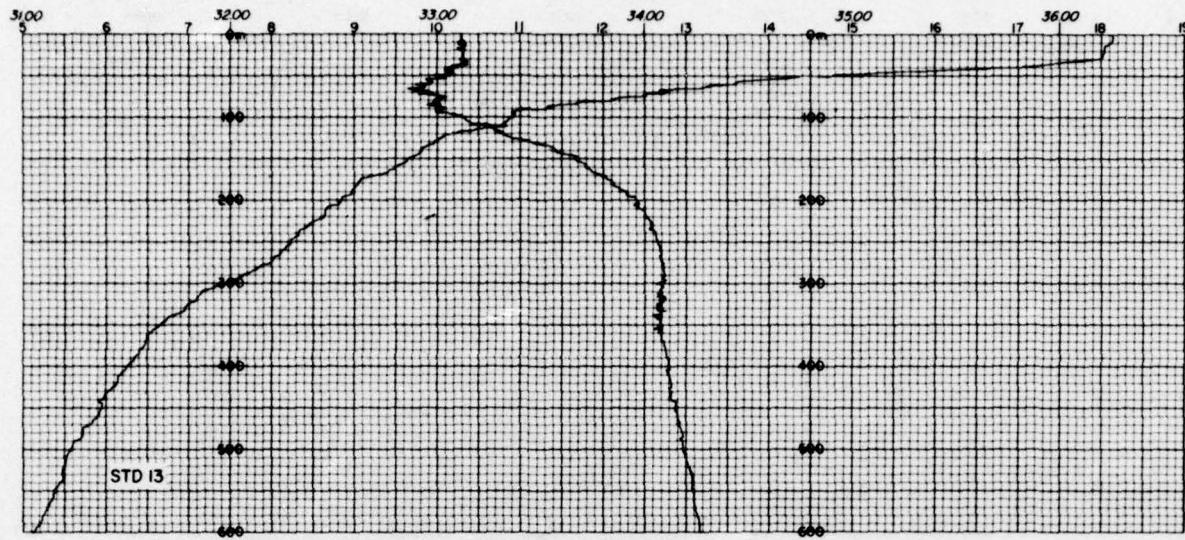
	LATITUDE 33 54.5N	LONGITUDE 125 25.0W	MO/DAY/YR 09/19/66	MESSINGER TIME 0232 GMT	BOTTOM 4669M	WIND 350	SPEED 19KT	WEATHER 1	DOMINANT WAVES 350 05						
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
0									0	18.48	33.07		23.699	420.6	0
10									10	18.48	33.07		23.699	420.6	.042
20									20	18.48	33.07		23.699	420.6	.084
30									30	17.95	33.05		23.814	409.7	.126
50									50	15.40	32.95		24.327	360.8	.203
75									75	12.80	32.98		24.890	307.2	.287
100									100	12.30	33.17		25.133	284.0	.361
125									125	11.10	33.26		25.425	256.3	.430
150									150	9.87	33.46		25.793	221.2	.490
200									200	8.02	33.87		26.283	174.7	.591
250									250	8.20	34.00		26.480	156.0	.675
300									300	7.51	34.04		26.613	143.4	.752
400									400	6.34	34.09		26.812	124.5	.892
500									500	5.70	34.18		26.964	110.1	1.015
600									600	5.04	34.25		27.098	97.4	1.125

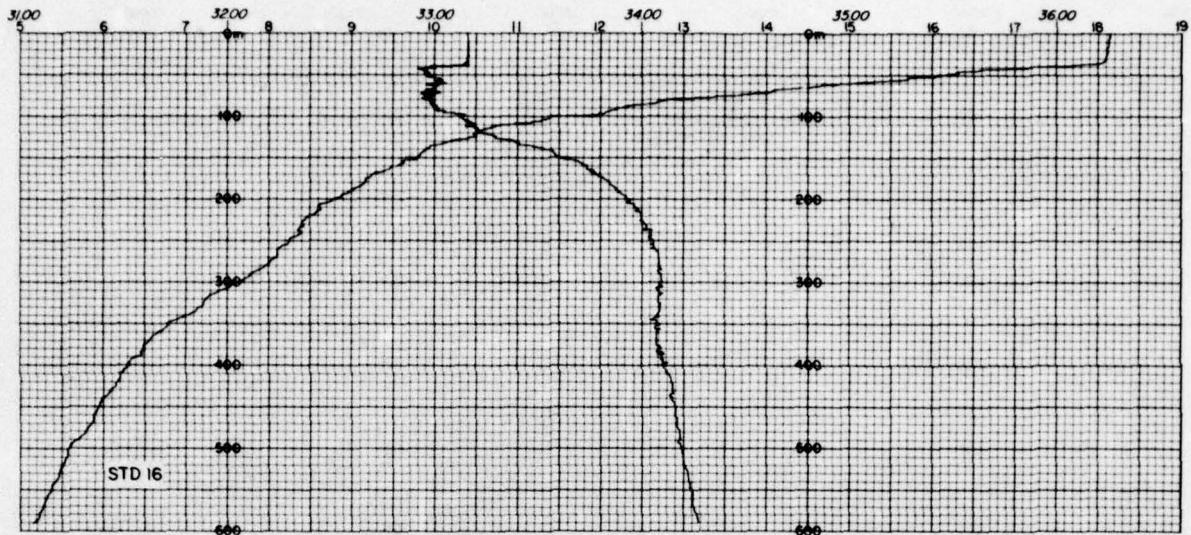




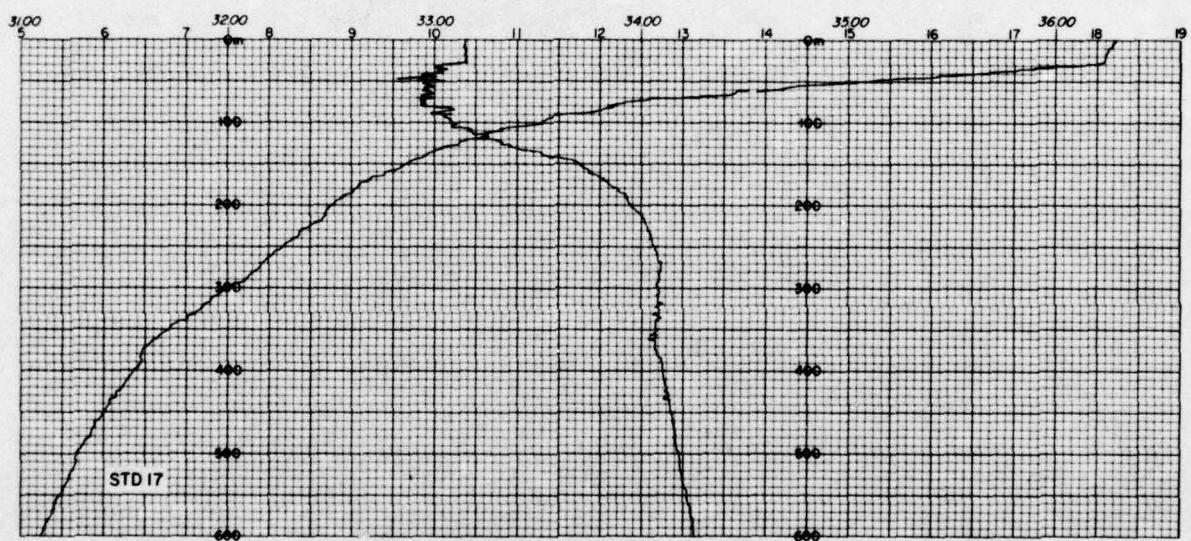




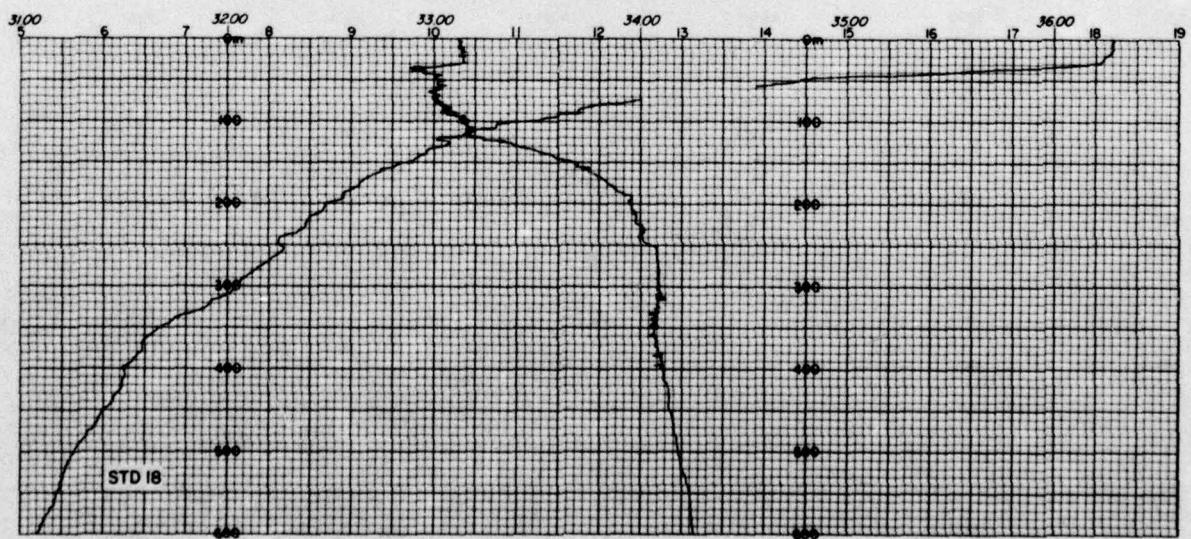




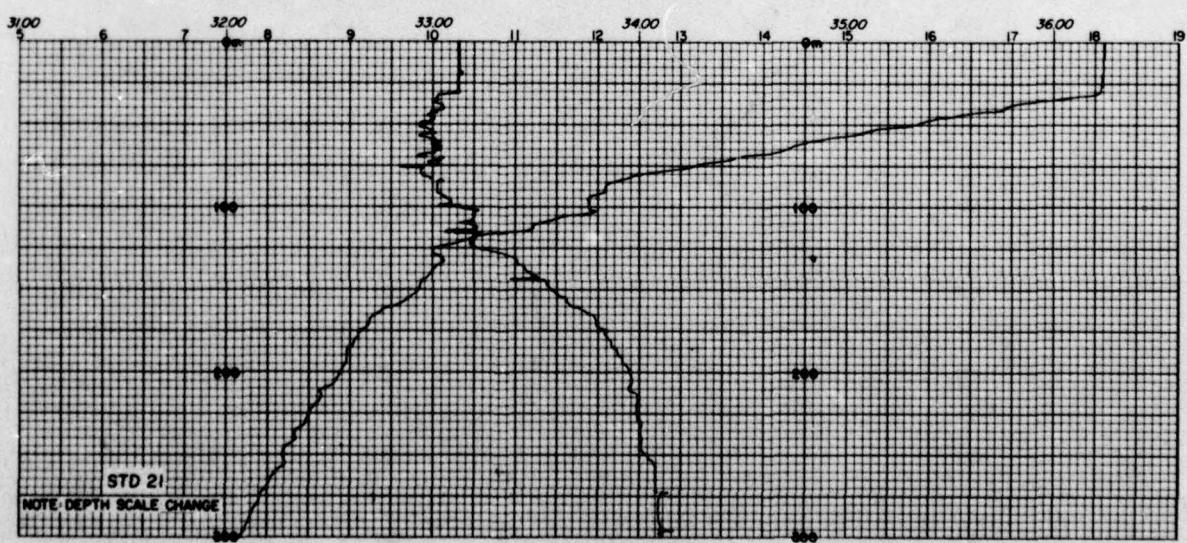
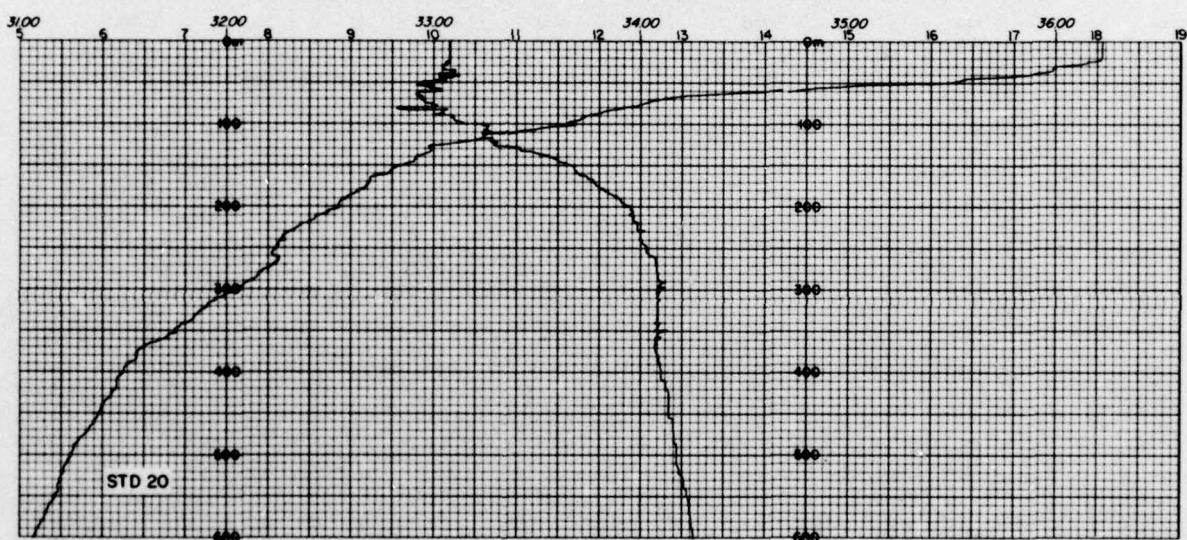
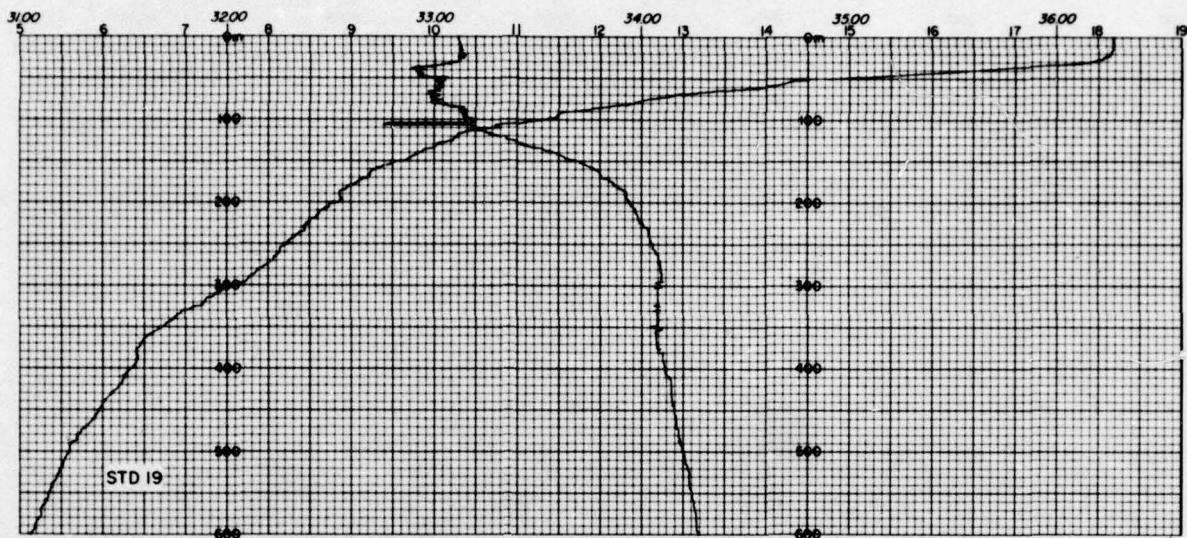
STD 16

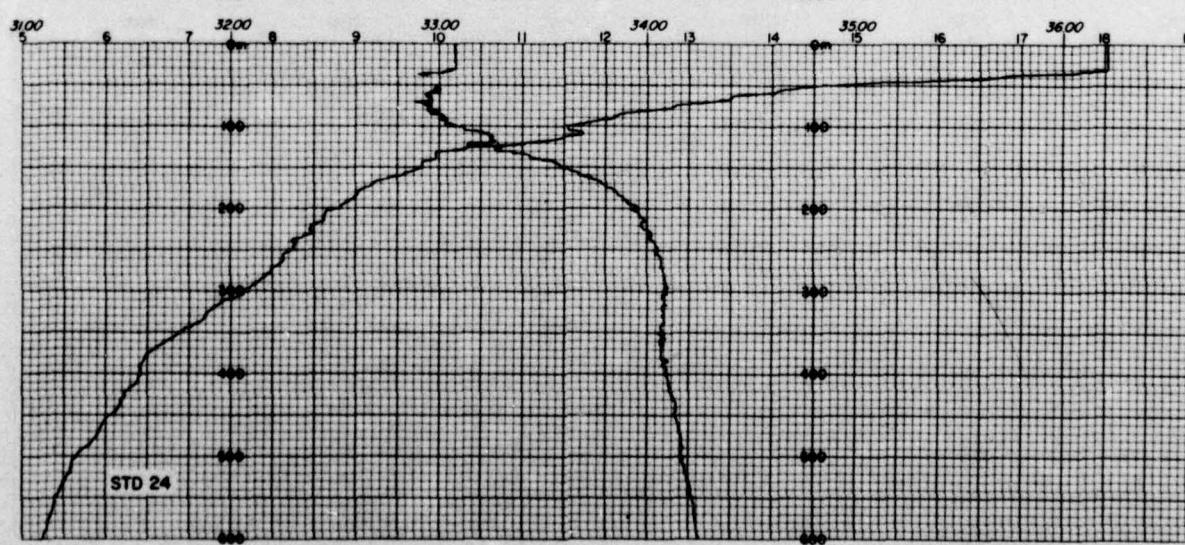
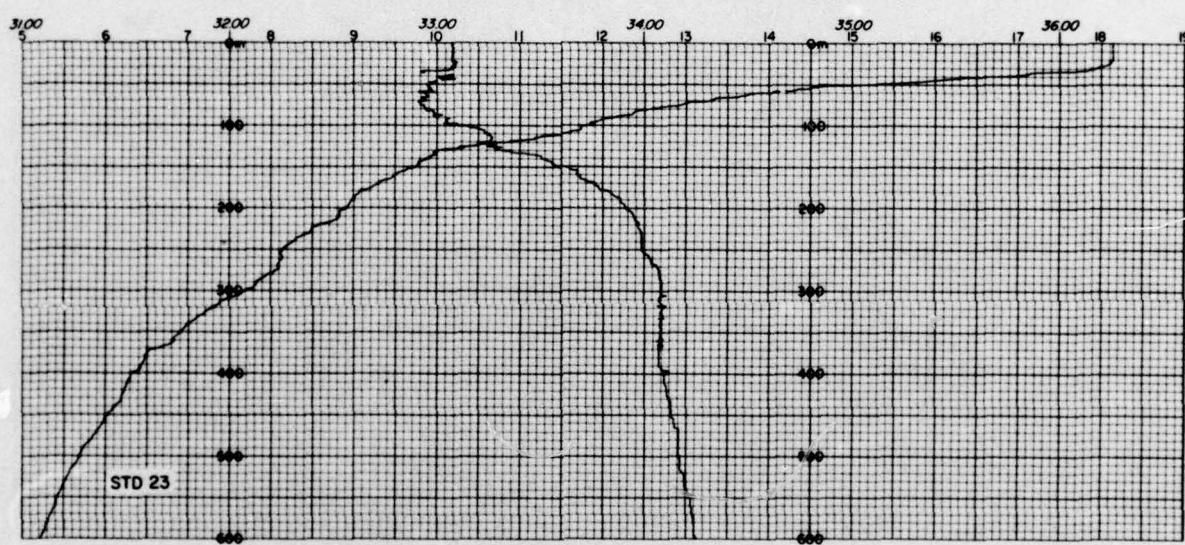
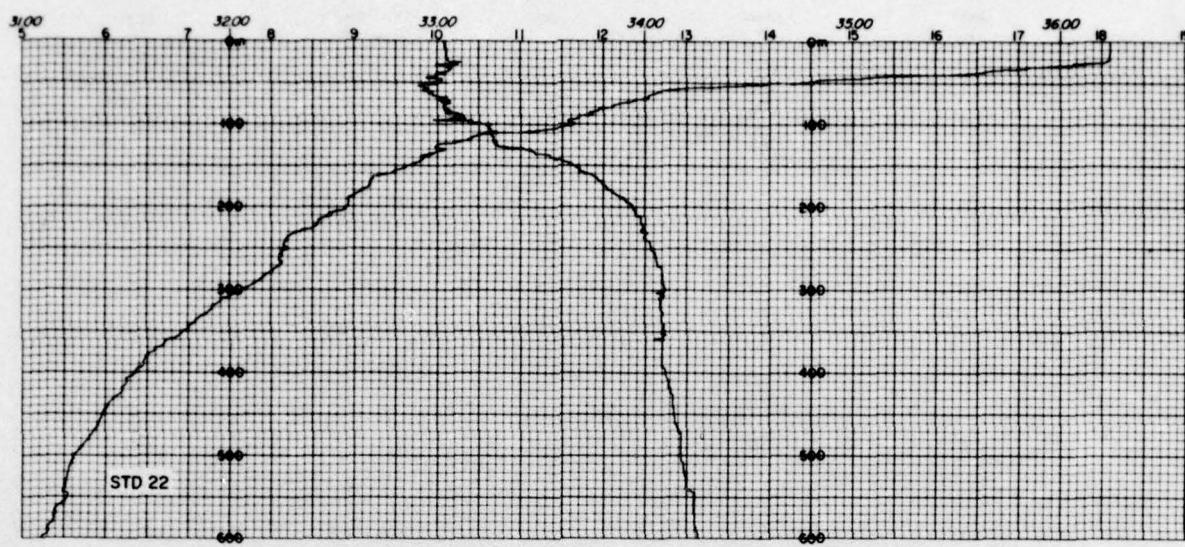


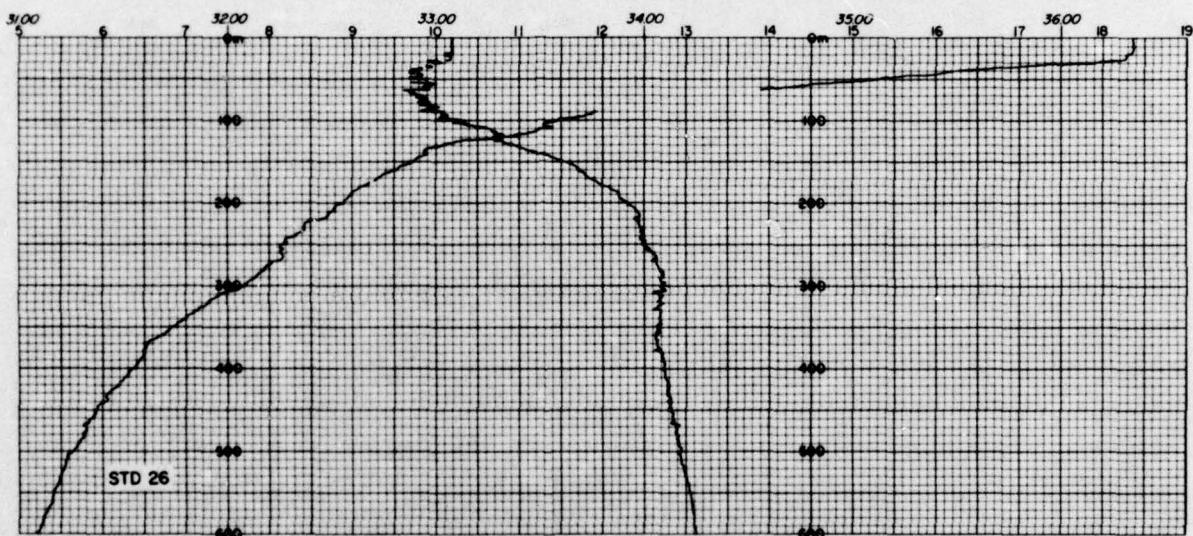
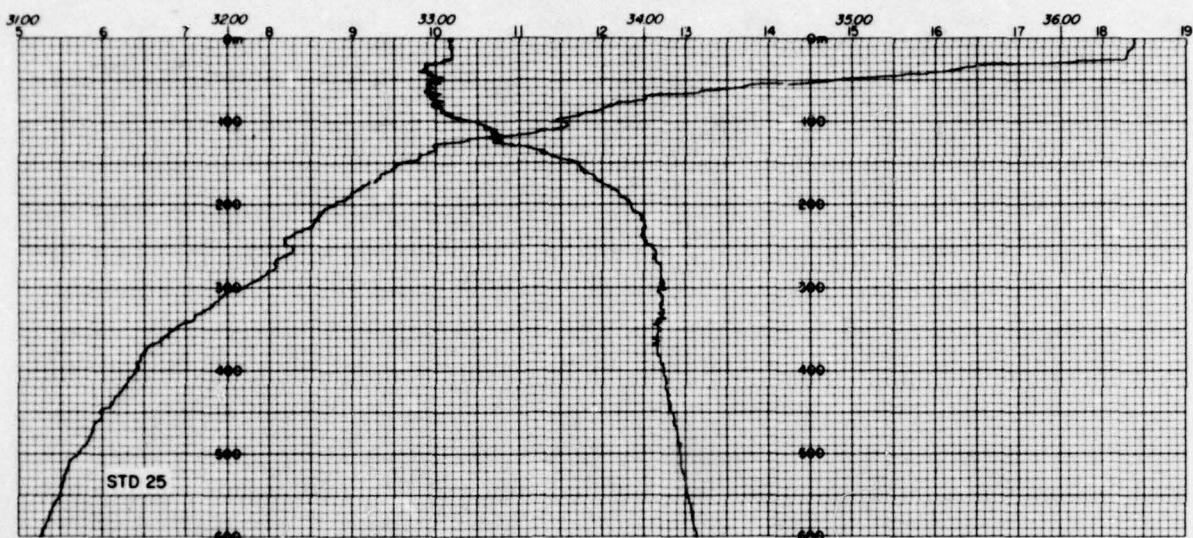
STD 17

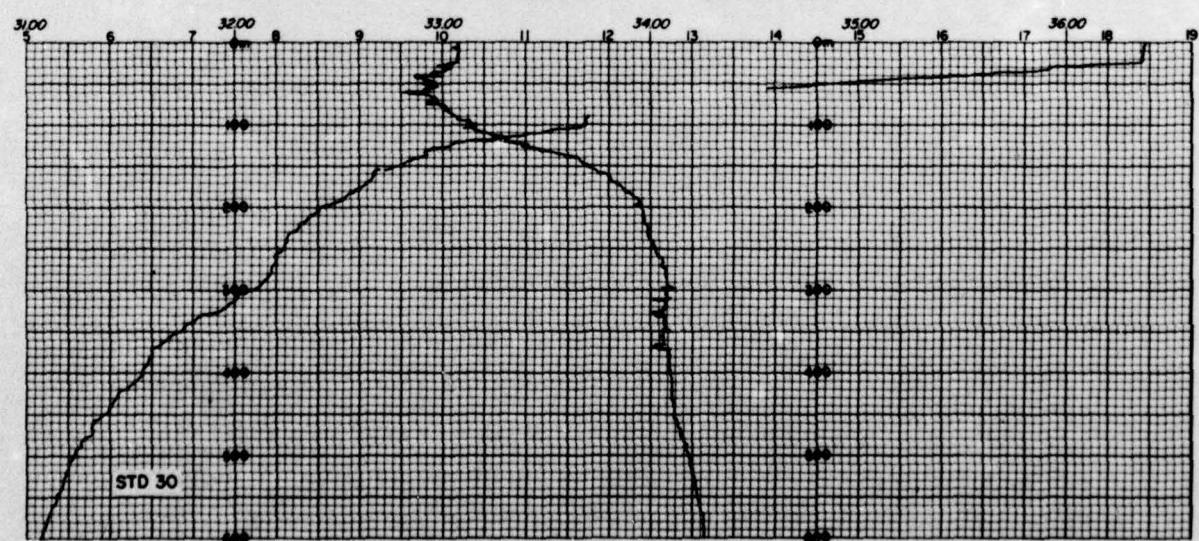
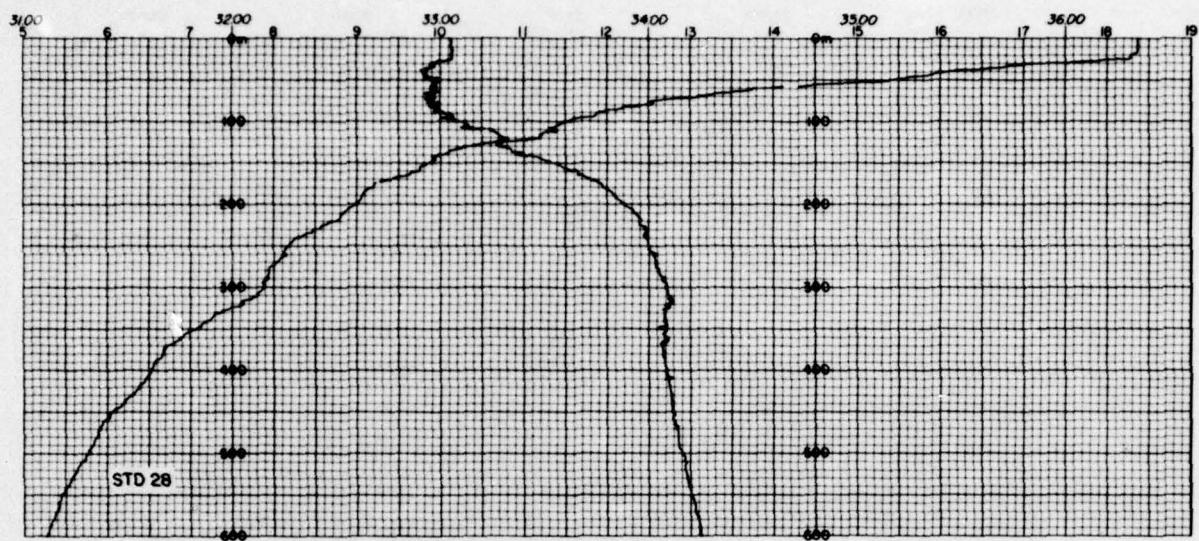


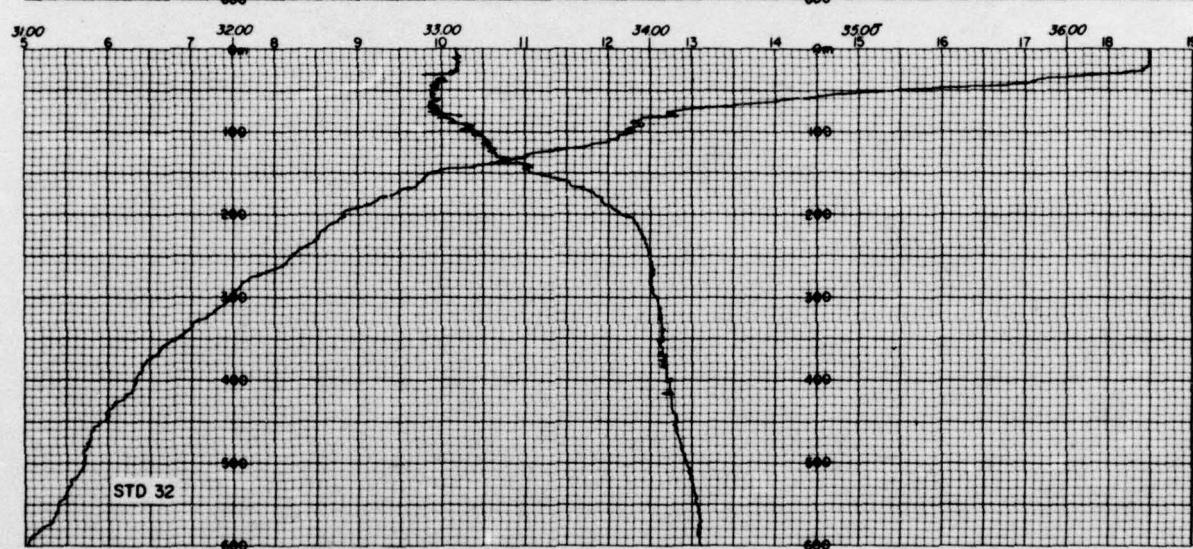
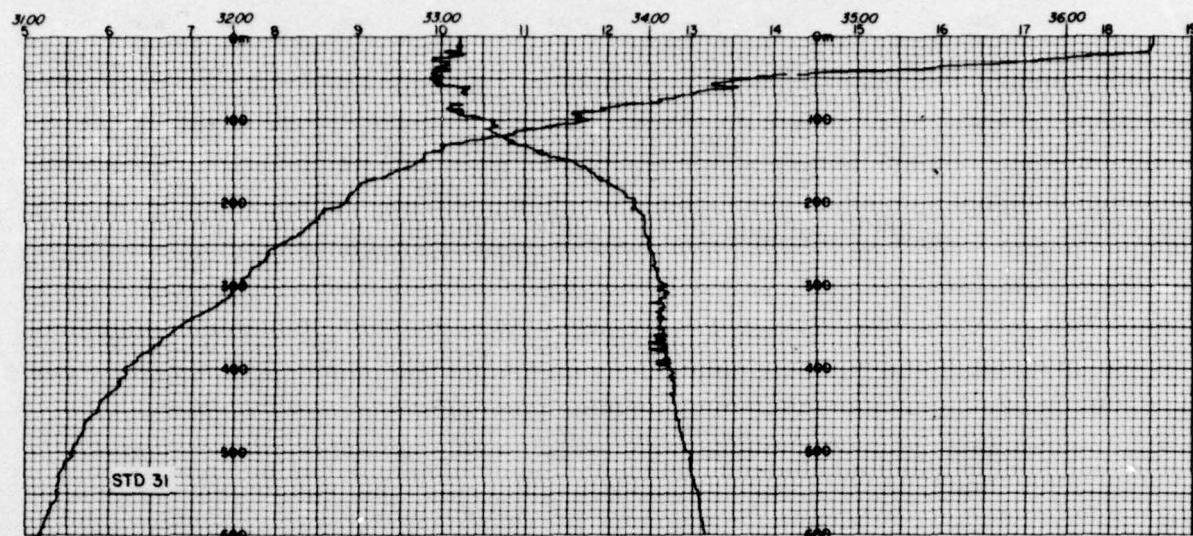
STD 18











NOVA Expedition Legs I-VI

The purpose of NOVA I was to: 1) analyze rare gases in sea water, 2) take gravity and piston cores of sediments, 3) sample atmospheric dust continuously, and 4) isolate thorium isotopes from sea water for subsequent isotopic analysis.

No interpolated and calculated values at standard depths are listed for NOVA I because of uncertainties caused by frequent posttrips and widely spaced observations on multiple casts.

The purpose of NOVA II was to investigate the possibility that islands in a steady wind current shed alternating Kármán vortices on a much larger scale than those commonly observed in laboratory flow past cylinders.

The principal work done on NOVA III was: 1) the first precise profiles of dissolved total CO₂ were made; CO₂ production/O₂ consumption rates in the deep sea were compared; studies of total CO₂ in equatorial waters were made, 2) the relationships between stable inorganic carbon (total CO₂) and radiocarbon in deep sea water were studied, 3) studies were made of the circulation of bottom water based on temperature profiles from hydrographic casts and from thermometer data on heat probes, and 4) Dixon and Honhaus seamounts were discovered and the magnetic structure and history of Dixon seamount was studied.

On NOVA III when surface temperature was determined with a bucket or injection thermometer it is listed to tenths. When surface salinity and oxygen were determined from bucket samples they are listed to hundredths and tenths, respectively.

The purpose of NOVA V was to make geological observations (echo soundings, magnetic profiling, seismic refraction, dredging, coring, heat flow measurements, and photographing) in order to determine the nature of the sea floor and the geological structure beneath in several locations: between New Caledonia and the Loyalty Islands, across the New Hebrides Trench, along the Norfolk Ridge, in the New Caledonia Basin, over the Lord Howe Rise, and across the Tasman Basin.

Salinity is listed to hundredths on NOVA V because of uncertainty in operation of the salinometer.

The work carried out on NOVA VI was: 1) measurements of the He^3/He^4 ratio in dissolved helium in sea water; this work first established the presence of primordial excess He^3 in deep ocean water, 2) the first measured profiles of the radioactive isotope Sr^{32} in ocean water were made, and 3) the structure of the benthic front in the deep South Pacific ocean was studied. (See also items 1, 2 and 3 on NOVA III, work which was continued on NOVA VI.)

NOVA Expedition was sponsored by the National Science Foundation and the Office of Naval Research.

Personnel participating in the collection of data:

<u>Name</u>	<u>Participation (Leg)</u>
Goldberg, Dr. E.*	I
Van Dorn, Dr. W. G.*	II
Craig, Dr. H.*	III, VI
Menard, Dr. H. W.*	V
Anceaux, J.	I
Bell, A.	V
Bieri, R.	I
Blankley, W. F.	II
Boden, B. P.	II
Brennen, R. E.	I, II, III
Chung, Y.	III
Church, T.	I
Craig, V.	VI
Dixon, F. S.	III
Dixon, R. L.	II
Earl, J. L.	I
Francheteau, J. M.	III, V
Fruchter, J. S.	III
Fuech, J.	VI
Hacker, P. W.	II
Hardy, J. A.	VI
Hugget, R. J.	III
Jones, A.	V
Jones, J. H.	II
Kerig, D.	V
Kirk, H. K.	V
Kiwala, R. S.	II
Koide, M.	I
Kohlage, J. M.	I, II
Lam, R. K.	II
Mauch, W. W.	II, III
McGowan, D.	V
Michael, F. A.	II, III
Newhouse, D. A.	V
Nicholson, J.	V
Obler, S.	I, II, V

*Chief Scientist

<u>Name</u>	<u>Participation (Leg)</u>
Peterson, M. R.	III
Pine, J. S.	II, VI
Rasmussen, R. A.	II
Rowe, A. R.	I, II, III
Sclater, J. G.	III
Sertic, P.	II
Shor, G. G.	I
Slawson, H. P.	III
Smith, W.	V
Solomon, S.	V
Somayajulu, B. L. K.	III, VI
Summerhayes, C.	V
Tait, R. J.	III
Taylor, G.	V
Taylor, L.	II
Van Dorn, R.	II
Waterman, L. S.	I, II, III, V
Weiss, R. F.	III, VI
Winsett, R. C.	II

Papers resulting from NOVA Expedition data:

Leg I

Bieri, R. H., M. Koide and E. D. Goldberg, 1968. Noble gases of marine waters. *Earth Planet. Sci. Lett.*, 4: 239-240.

Leg II

Van Dorn, W. G., P. W. Hacker and R. K. Lam, 1968. Circulation around oceanic islands. SIO Ref. 67-34.

Leg III

Francheteau, J., J. G. Sclater and H. Craig, 1969. Magnetization of a recently discovered seamount in the central Pacific. *Geophysics*, 34: 645-651.

Legs III and VI

Chung, Y., M. L. Bell, J. G. Sclater and C. Corry, 1969. Temperature data from the Pacific abyssal water. SIO Ref. 69-17.

Chung, Y., 1971. Pacific deep and bottom water studies based on temperature, radium and excess-radon measurements. Doctoral dissertation, Univ. Calif. San Diego, 239 pp.

Chung, Y., in press. Areal extent of the benthic front and variation of the "scale-height" in Pacific deep and bottom water. *J. Geophys. Res.*

Craig, H., 1969. Abyssal carbon and radiocarbon in the Pacific. *J. Geophys. Res.*, 74: 5491-5506.

Craig, H., 1971. The deep metabolism: oxygen consumption in abyssal ocean water. *J. Geophys. Res.*, 76: 5078-5086.

Edmond, J. M., Y. Chung and J. G. Sclater, 1971. Pacific bottom water: penetration east around Hawaii. *J. Geophys. Res.*, 76: 8089-8097.

Leg V

Shor, G. G., H. K. Kirk and H. W. Menard, 1971. Crustal structure of the Melanesian area. *J. Geophys. Res.*, 76: 2562-2586.

Leg VI

Clarke, W. B., M. A. Beg and H. Craig, 1969. Excess He³ in the sea: evidence for terrestrial primordial helium. Earth Planet. Sci. Lett., 6: 213-220.

Craig, H., W. B. Clarke and M. A. Beg, in press. Excess He³ in deep water on the East Pacific Rise. Earth Planet. Sci. Lett.

Somayajulu, B. L. K., D. Lal and H. Craig, 1973. Silicon-32 profiles in the South Pacific. Earth Planet. Sci. Lett., 18: 181-188.

A book resulting from NOVA Expedition is:

Menard, Henry W., 1969. Anatomy of an expedition. McGraw-Hill, New York, 255 pp. (Translated into Russian, 1974)

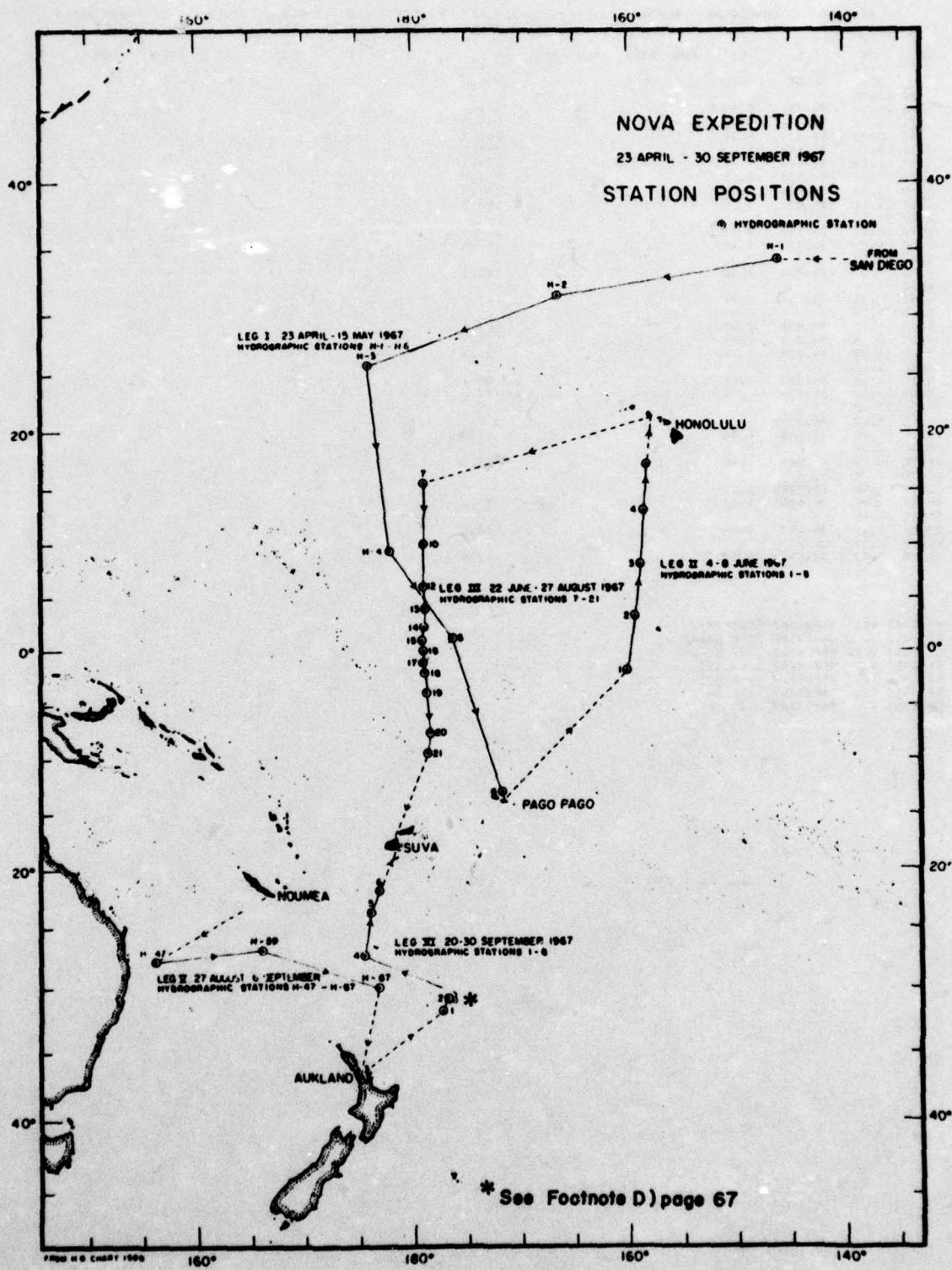


FIGURE 4

RV ARGO

NOVA EXPEDITION I										H 1						
LATITUDE 34 20.9N		LONGITUDE 146 06.8W		MO/DAY/YR 05/23/67		MESSENGER 2154		TIME 0907GMT		BOTTOM 5381M	WIND 080	SPEED 08KT	WEATHER	DOMINANT WAVES 040 07 12		
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD	
0	15.4	34.52						246.0								
9A	15.38															
10B	15.38	34.521	5.99					245.5								
11C	15.39	34.534	5.92					245.8								
25B	15.34	34.514	5.94					245.2								
50B	15.28	34.498	5.93					245.1								
99B	15.25	34.494	5.98					244.7								
129B	15.22	34.485	5.95					244.8								
149B	14.98	34.460	5.89					243.0								
202A	11.12	34.051	5.50					198.2								
252A	10.53															
253C	10.50	34.157	5.26					179.4								
303C	9.66	34.129	4.58					168.4								
305A	9.62															
405A	8.00	34.031	4.46					150.9								
407D	7.68															
509A	5.98	33.962	2.21					129.7								
514D	5.79															
607D	4.77	34.006	2.19					112.8								
711D	4.26	34.110	1.11					99.7								
789E	3.99	34.179	.70					91.8								
887E	3.66															
911D	3.58	34.283	.44					80.1								
984E	3.42	34.337	.38					74.6								
1469E	2.62															
1471D	2.62	34.352U														
1963E	1.98	34.616	1.76					41.5								
1974F	1.98															
2453E	1.69	34.648	2.70					37.0								
2463F	1.70															
2952F	1.56	34.588U	2.81													
3440F	1.47	34.680	3.32					33.1								
3889G	1.48															
3928F	1.48	34.687	3.60					32.6								
4417F	1.51															
5072G	1.57	34.691	3.52					32.9								

- A) CAST VI. 04/24/67 0807 GMT.
- B) CAST I. 04/23/67 2154 GMT.
- C) CAST VII. 04/24/67 0907 GMT.
- D) CAST V. 04/24/67 0644 GMT.
- E) CAST IV. 04/24/67 0440 GMT.
- F) CAST III. 04/24/67 0215 GMT.
- G) CAST II. 04/23/67 2315 GMT.

RV ARGO

NOVA EXPEDITION I										H 2					
LATITUDE	LONGITUDE	MO/DAY/YR	MESSINGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES						
31 34.7N	166 34.1W	04/28/67	2311	1313GMT	5726M					02	SIGT	DT	DD		
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	17.8	34.88						273.1							
10A	16.94 U	34.884	5.90												
44A	17.70	34.882	5.74					270.6							
64A	16.78 F	34.717	5.88						261.7						
109A	14.94	34.506	5.79						237.4						
164A	14.42	34.526	5.37						225.2						
218A	13.18	34.455	5.25						206.0						
515B	7.56	34.047	4.07						143.6						
625B	5.40	34.000	4.07						120.1						
773B	4.14	34.128	1.38						97.1						
819B	4.00	34.166	1.44						92.9						
1023B	3.40	34.352	.41						73.2						
1516B	2.55	34.563	1.45						50.0						
1557C	2.48	34.557	1.40						49.9						
1856D	2.13	34.599	1.88						44.0						
2433D	1.73	34.646	2.40						37.4						
2555C	1.66	34.651	2.58						36.6						
2934D	1.57	34.666	2.92						34.8						
3076C	1.54	34.669	3.04						34.4						
3435D	1.50	34.676	3.24						33.6						
3588C	1.48	34.681	3.33						33.0						
3904E	1.51	34.686	3.40						32.9						
3939D	1.49	34.688	3.47						32.7						
4129C	1.48	34.696	3.55						31.9						
4396E	1.50	34.691	3.58						32.4						
4449D	1.50	34.690	3.63						32.5						
4638C	1.52	34.695	3.89						32.3						
4887E	1.56	34.691	3.96						32.8						
5380E	1.58	34.692	3.80						32.9						
5628E	1.60	34.705	4.08U						32.1						
5667E	1.60	34.702	3.87						32.3						

- A) CAST VI. 04/29/67 1313 GMT. ALL DATA FROM CAST V REJECTED.
 B) CAST II. 04/29/67 0153 GMT.
 C) CAST IV. 04/29/67 0844 GMT.
 D) CAST III. 04/29/67 0335 GMT.
 E) CAST I. 04/28/67 2311 GMT.
 F) ALTERNATE VALUE 16.67 DEGREES.

RV ARGO

NOVA EXPEDITION I										H 3					
LATITUDE	LONGITUDE	MO/DAY/YR	MESSINGER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES						
25 44.7N	175 58.5E	05/04/67	0115	1510GMT	5897M					02	SIGT	DT	DD		
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	22.8	35.43						359.8							
4A	22.78	35.432	5.10						359.1						
29A	22.68	35.426	5.14						356.8						
46A	21.57	35.377	5.33						330.6						
66B	20.32	35.267	5.32						306.3						
90B	19.43	35.211	5.47						288.1						
136B	18.24	35.063	5.54						270.1						
200C	17.12	34.793	5.32						263.8						
313C	14.51	34.575	4.92						223.5						
418C	11.70	34.350	4.94						186.3						
476D	10.12	34.227	4.73						168.5						
570D	7.51	34.074	3.65						140.9						
624D	6.28 G	34.071G	2.98G						125.2						
660D	5.50 G	34.057G	2.72G						117.0						
739D	4.90 G	34.088G	2.17G						108.0						
785D	4.50 G	34.178G	1.38G						97.0						
1009B	3.52 G	34.360G	.88G						73.7						
1064E	3.41 G	34.384G	.90G						70.9						
1128E	3.24 G	34.435G	.99G						65.9						
1432E	2.62 G	34.536G	1.48G						52.6						
1739E	2.14 G	34.591G	2.01G						44.6						
2030E	1.94 G	34.625G	2.39G						40.6						
4204C	1.48	34.640	2.55						36.2						
4622F	1.44	34.699	3.84						31.4						
4703C	1.45	34.667	.90U						33.9						
5057F	1.46	34.700	4.14						31.5						
5301C	1.44	34.700	4.04						31.3						
5545F	1.40	34.703	4.24						31.4						
5641F	1.40	34.703	4.23						31.4						
5739F	1.40	34.702	4.23						31.5						
5782F	1.47	34.706	4.29						31.1						

- A) CAST V. 05/04/67 1403 GMT.
 B) CAST VI. 05/04/67 1510 GMT.
 C) CAST III. 05/04/67 0830 GMT.
 D) CAST II. 05/04/67 0405 GMT.
 E) CAST IV. 05/04/67 1159 GMT.
 F) CAST I. 05/04/67 0115 GMT.
 G) THESE DATA ARE VERY DOUBTFUL. THE SAMPLE BOTTLE POSTTRIPPED CAUSING A POSSIBLE DEPTH ERROR OF AS MUCH AS 15 PER CENT.

RV ARGO

NOVA EXPEDITION I

H 4

	LATITUDE 9 17.1N	LONGITUDE 177 56.1E	MO/DAY/YR 05/09/67	MESSINGER 0002	TIME 0744GMT	BOTTOM 5698M	WIND 180	SPEED 02KT	WEATHER	Dominant Waves					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	28.2	34.38							594.1						
10A	28.11	34.384	4.66						591.0						
49A	27.79	34.382							581.1						
68A	27.36	34.320	4.74						557.9						
103A	20.64	34.817	4.72						347.0						
192A	13.00	34.658	2.40						202.3						
201A	10.88	34.658	.46						149.3						
303B	9.70	34.579	.62						126.3						
412B	8.68	34.629	.53						116.3						
501C	7.82	34.586	.58						107.0						
603C	6.90	34.552	.65						97.1						
701C	6.08	34.545	.71						87.3						
805C	5.51	34.543	.97						80.7						
905C	5.01	34.547	1.14						74.0						
1006C	4.57	34.557	1.38						69.3						
1522B	2.96	34.601	1.96						50.6						
2063B	2.13	34.641	2.52						40.8						
2504B	1.80	34.664	2.82						36.6						
3093B	1.62	34.675	3.17						34.5						
3641D	1.46	34.690	3.56						32.2						
4127D	1.35	34.696	4.08						31.0						
4615D	1.30	34.704	4.34						30.1						
5103D	1.33	34.709	4.47						29.9						
5357D	1.34	34.706	4.52						30.2						
5592D	1.37	34.708	4.53						30.2						

- A) CAST IV. 05/09/67 0744 GMT.
 B) CAST III. 05/09/67 0552 GMT.
 C) CAST II. 05/09/67 0230 GMT.
 D) CAST I. 05/09/67 0002 GMT.

RV ARGO

NOVA EXPEDITION I

H 5

	LATITUDE 1 09.6N	LONGITUDE 176 21.0W	MO/DAY/YR 05/11/67	MESSINGER 2340	TIME 0922GMT	BOTTOM 5396M	WIND	SPEED	WEATHER	Dominant Waves					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0	27.5	35.16							516.2						
5A	27.48	35.154	4.72						516.0						
60A	27.18	35.218	4.61						502.2						
80A	27.06	35.243	4.50						496.7						
151B	23.70	35.166	3.30						406.0						
192B	23.71	35.171	3.33						403.7						
203A	13.90	34.842	3.26						191.7						
307A	11.30	34.822	2.24						144.5						
406A	9.10	34.678	1.64						120.2						
517C	7.74	34.605	1.84						104.5						
639C	6.42	34.564	1.77						90.1						
799D	5.34	34.545	2.19						78.6						
10000	4.58	34.555	1.99						69.5						
1514D	2.93	34.608	2.34						49.8						
2029D	2.25	34.652	2.69						40.9						
2474D	1.82 F	34.664F	2.96F						36.7						
2823D	1.69 F	34.670F	3.18F						35.3						
3496E	1.52	34.684	3.55						33.1						
3979E	1.40	34.695	3.92						31.4						
4301E	1.30 F	34.702F	4.22F						30.2						
4469E	1.26	34.706	4.41						29.7						
4959E	1.28	34.706	4.54						29.8						
5303E	1.30	34.708	4.64						29.8						

- A) CAST IV. 05/12/67 0847 GMT.
 B) CAST V. 05/12/67 0922 GMT.
 C) CAST II. 05/12/67 0223 GMT.
 D) CAST III. 05/12/67 0449 GMT.
 E) CAST I. 05/11/67 2340 GMT.
 F) THESE DATA ARE VERY DOUBTFUL. THE SAMPLE BOTTLE POSTTRIPPED CAUSING A POSSIBLE DEPTH ERROR OF AS MUCH AS 15 PER CENT.

RV ARGO

NOVA EXPEDITION I

H 6

LATITUDE 12 57.05	LONGITUDE 171 43.9W	MO/DAY/YR 05/15/67	MESSINGER 1845	TIME 0022GMT	BOTTOM 4702M	WIND 060	SPEED 08KT	WEATHER I	Dominant Waves 060 04 09					
Z	T	S	02	P04 S103	N02 N03	DT	Z	T	S	02	SIGT	DT	DD	
3A	29.00	34.326	4.63			623.3								
35A	28.90	34.341	4.65			619.1								
64A	28.71	35.390	4.78			537.6								
85B	28.59	35.456	4.78			529.1								
104A	27.75	35.743	4.67			482.1								
124B	26.38	36.087	3.98			415.4								
165A	24.36	36.159	3.60			350.9								
217C	21.77	35.933	3.69			295.7								
324C	15.20	35.113	3.59			198.5								
432C	9.68	34.656	3.11			129.7								
540C	6.97	34.496	3.66			102.2								
648C	5.84	34.474	3.63			89.7								
756C	5.18	34.483	3.52			81.4								
856D	4.67	34.49	3.43			75.4								
1070D	3.94	34.527	3.26			65.2								
1588D	2.58	34.611	3.39			46.6								
2094D	2.04	34.654	3.50			39.1								
2687D	1.81	34.670	3.49			36.2								
3048E	1.65	34.677	3.54			34.5								
3522E	1.52	34.681	3.88			33.3								
4002E	1.22	34.722	4.76			28.2								
4484E	1.08	34.717	4.87			27.7								
4629E	1.03	34.703	4.86			28.4								
4674E	1.03	34.718	4.89			27.3								

- A) CAST IV. 05/15/67 2344 GMT.
 B) CAST V. 05/16/67 0022 GMT.
 C) CAST II. 05/15/67 2059 GMT.
 D) CAST III. 05/15/67 2210 GMT.
 E) CAST I. 05/15/67 1845 GMT.

NOVA EXPEDITION II													1 A						
RV ARGO		LATITUDE 1 50.0S		LONGITUDE 160 06.5W		MO/DAY/YR 06/04/67		MESSENGER 1929		TIME GMT		BOTTOM 5201M		WIND	SPEED	WEATHER	DOMINANT WAVES		
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD				
0	27.14	35.185						503.3	0	27.14	35.185		22.833	503.3	0				
10	27.12	35.184						502.8	10	27.12	35.184		22.839	502.8	.050				
48	27.15	35.320						493.9	20	27.13	35.214		22.858	500.9	.101				
97	26.82	35.329						483.2	30	27.14	35.249		22.881	498.8	.151				
145	19.16	35.554						256.6	50	27.14	35.320		22.936	493.5	.250				
194	13.15	35.008						164.8	75	26.97	35.325		22.994	488.0	.374				
								100	26.642	35.343			23.181	470.2	.494				
								125	22.69	35.444			24.381	355.8	.599				
								150	18.34	35.488			25.579	241.6	.674				
								200	12.90	35.000			26.431	160.6	.778				
NOVA EXPEDITION II													1 B						
RV ARGO		LATITUDE 1 50.0S		LONGITUDE 160 06.5W		MO/DAY/YR 06/04/67		MESSENGER 1947		TIME GMT		BOTTOM 5201M		WIND	SPEED	WEATHER	DOMINANT WAVES		
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD				
0	27.15	35.189						503.3	0	27.15	35.189		22.833	503.3	0				
10	27.12	35.184						502.8	10	27.12	35.184		22.839	502.8	.050				
49	27.12	35.303						494.2	20	27.13	35.208		22.857	501.1	.101				
99	26.82	35.329						483.2	30	27.12	35.236		22.878	499.0	.151				
148	18.48	35.482						245.4	50	27.11	35.303		22.931	494.0	.250				
197	12.40	34.946						155.2	75	26.96	35.316		22.989	488.5	.374				
								100	26.68	35.331			23.091	478.7	.496				
								125	22.75	35.385			24.318	361.8	.602				
								150	18.14	35.455			25.603	239.3	.678				
								200	12.25	34.940			26.513	152.9	.779				
NOVA EXPEDITION II													2 A						
RV ARGO		LATITUDE 3 14.4N		LONGITUDE 159 30.0W		MO/DAY/YR 06/05/67		MESSENGER 1821		TIME GMT		BOTTOM 3757M		WIND	SPEED	WEATHER	DOMINANT WAVES		
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD				
0	27.34	35.062						518.3	0	27.34	35.062		22.677	518.3	0				
10	27.23	35.078						513.8	10	27.23	35.078		22.724	513.8	.052				
50	27.03	35.096						506.4	20	27.16	35.085		22.752	511.1	.103				
101	26.90	35.152						498.4	30	27.10	35.090		22.775	508.9	.154				
156	20.09	34.801						334.2	50	27.03	35.096		22.802	506.4	.256				
205	11.38	34.598						162.4	75	26.97	35.123		22.843	502.4	.383				
								100	26.90	35.151			22.884	498.5	.509				
								125	24.55	35.017			23.512	438.5	.627				
								150	21.08	34.837			24.369	356.8	.728				
								200	12.38	34.591			26.216	181.0	.865				
NOVA EXPEDITION II													2 B						
RV ARGO		LATITUDE 3 14.4N		LONGITUDE 159 30.0W		MO/DAY/YR 06/05/67		MESSENGER 1838		TIME GMT		BOTTOM 3757M		WIND	SPEED	WEATHER	DOMINANT WAVES		
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD				
0	27.44								0	27.44									
10	27.22								10	27.22									
50	27.02								20	27.17									
100	26.90								30	27.12									
155	18.18								50	27.02									
204	11.12								75	26.96									
									100	26.90									
									125	23.44									
									150	19.14									
									200	11.67									
NOVA EXPEDITION II													3 A						
RV ARGO		LATITUDE 8 07.0N		LONGITUDE 158 95.5W		MO/DAY/YR 06/06/67		MESSENGER 1818		TIME GMT		BOTTOM 2876M		WIND	SPEED	WEATHER	DOMINANT WAVES		
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD				
0	27.54	34.458						567.9	0	27.54	34.458		22.158	567.9	0				
10	27.57	34.450						568.0	10	27.57	34.458		22.149	568.8	.057				
48	27.45	34.461						564.9	20	27.54	34.459		22.159	567.8	.116				
96	18.30	34.777						294.2	30	27.51	34.460		22.170	566.8	.171				
146	12.05	34.699						169.9	50	27.14	34.466		22.292	565.1	.263				
193	10.10	34.671						136.7	75	22.78	34.568		23.669	421.8	.406				
									100	17.73	34.769			25.179	279.6	.494			
									125	14.24	34.730			25.966	206.7	.556			
									150	11.76	34.661			26.309	164.6	.603			
									200	10.13	34.675			26.696	135.6	.680			

RV ARGO **NOVA EXPEDITION II** **3 B**

LATITUDE 0 07.ON	LONGITUDE 158 55.5W	MO/DAY/YR 06/06/67	MESSANGER 1835	TIME GMT	BOTTOM 2876M	WIND 060	SPEED 05KT	WEATHER 1	DOMINANT WAVES 060 04 06							
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD	
0 27.58						0	27.58									
10 27.56						10	27.56									
48 27.38						20	27.51									
96 19.30						30	27.47									
146 12.05						50	27.12									
193 10.32						75	25.31									
						100	18.60									
						125	14.68									
						150	11.90									
						200	10.27									

RV ARGO **NOVA EXPEDITION II** **4 A**

LATITUDE 13 05.ON	LONGITUDE 158 36.5W	MO/DAY/YR 06/07/67	MESSANGER 1815	TIME GMT	BOTTOM 5119M	WIND 090	SPEED 13KT	WEATHER	DOMINANT WAVES 03 07						
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
0 26.80	34.314				555.6	0	26.80	34.314	22.207	555.6	0				
10 26.79	34.312				555.4	10	26.79	34.312	22.208	555.4	.056				
49 26.79	34.316				555.2	20	26.79	34.313	22.209	555.4	.111				
98 22.43	34.876				389.8	30	26.79	34.314	22.290	555.3	.167				
153 17.94	34.789				283.0	50	26.72	34.328	22.322	552.3	.278				
202 12.26	34.265				202.7	75	24.74	34.608	23.146	473.5	.407				
						100	22.27	34.880	24.071	385.2	.515				
						125	20.32	34.870	24.597	335.0	.606				
						150	18.21	34.804	25.088	288.3	.685				
						200	12.53	34.292	25.997	205.7	.811				

RV ARGO **NOVA EXPEDITION II** **4 B**

LATITUDE 13 05.ON	LONGITUDE 158 36.5W	MO/DAY/YR 06/07/67	MESSANGER 1831	TIME GMT	BOTTOM 5119M	WIND 090	SPEED 13KT	WEATHER	DOMINANT WAVES 03 07							
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD	
0 26.79						0	26.79									
10 26.78						10	26.78									
49 26.78						20	26.78									
98 22.50						30	26.78									
154 17.88						50	26.72									
202 12.08						75	24.79									
						100	22.35									
						125	20.40									
						150	18.24									
						200	12.36									

RV ARGO **NOVA EXPEDITION II** **5 A**

LATITUDE 17 11.5N	LONGITUDE 158 15.0W	MO/DAY/YR 06/08/67	MESSANGER 1830	TIME GMT	BOTTOM 4498M	WIND 260	SPEED 14KT	WEATHER	DOMINANT WAVES 03 08						
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD
0 26.28	34.508				526.0	0	26.28	34.508	22.397	526.0	0				
10 26.29	34.509				526.2	10	26.29	34.509	22.394	526.2	.053				
48 26.28	34.517				525.3	20	26.29	34.511	22.397	526.0	.105				
96 24.70	34.747				662.4	30	26.28	34.513	22.399	525.7	.198				
151 21.79	35.097				356.7	50	26.24	34.524	22.621	523.7	.263				
198 10.10	34.848				282.4	75	25.55	34.628	22.912	495.8	.391				
						100	24.53	34.784	23.340	456.9	.511				
						125	23.33	34.971	23.836	407.6	.620				
						150	21.85	35.093	24.349	358.7	.717				
						200	18.08	34.848	25.155	281.9	.880				

RV ARGO **NOVA EXPEDITION II** **5 B**

LATITUDE 17 11.5N	LONGITUDE 158 15.0W	MO/DAY/YR 06/08/67	MESSANGER 1848	TIME GMT	BOTTOM 4498M	WIND 260	SPEED 14KT	WEATHER	DOMINANT WAVES 03 08							
Z	T	S	O2	P04	S103	N02	N03	DT	Z	T	S	O2	SIGT	DT	DD	
0 26.28						0	26.28									
10 26.28						10	26.28									
48 26.28						20	26.28									
96 26.04						30	26.28									
151 21.90						50	26.25									
198 10.10						75	25.63									
						100	24.68									
						125	23.48									
						150	21.97									
						200	18.08									

RV ARGO

NOVA EXPEDITION III

7

Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD	DOMINANT WAVES										
																06/22/67	0903	1207GMT	BOTTOM	WIND	SPEED	WEATHER	1	100	07	08
3	28.0	34.46							582.1	0	28.0	34.46		22.010	582.1	0										
11A	27.90	34.458	4.77						579.1	10	27.91	34.458		22.038	579.4	.058										
31A	27.88	34.453	4.79						578.8	20	27.89	34.456	4.78	22.043	579.0	.116										
51A	27.88	34.459	4.57						578.4	30	27.88	34.453	4.79	22.046	578.8	.174										
65A	26.27	34.780	4.92						506.1	50	27.88	34.459	4.57	22.048	578.4	.290										
78A	25.66	34.891	5.02						479.6	75	25.74	34.876	5.01	23.040	483.6	.424										
107A	24.60	35.004	4.90						435.2	100	24.87	35.047	4.95	23.437	445.7	.541										
122A	23.70	35.14	4.85						405.6	125	23.55	35.154	4.85	23.911	400.4	.647										
146A	22.38	35.20	4.86						365.0	150	22.04	35.179	4.83	24.363	357.3	.743										
192A	18.10	34.85	4.35						282.3	200	17.45	34.787	4.26	25.262	271.8	.904										
240A	14.69	34.50	3.99						228.6	250	13.84	34.452	4.10	25.816	219.0	1.030										
288A	11.40	34.28	4.29						186.2	300	10.62	34.224	4.09	26.259	177.0	1.132										
297A	10.78	34.234	4.14						178.9	400	7.68	34.192	2.48	26.707	136.5	1.295										
358A	8.66	34.164	3.24						150.2	500	6.49	34.332	1.41	26.982	108.4	1.423										
478A	6.66	34.299	1.60						112.7	600	6.06	34.445	1.41	27.120	94.5	1.532										
573A	6.20	34.420	1.63						97.5	700	5.54	34.485	1.34	27.224	85.4	1.630										
765A	5.21	34.49	1.30						81.3	800	5.06	34.499	1.31	27.294	78.0	1.722										
958A	4.38	34.528	1.62						69.5	1000	4.26	34.533	1.46	27.412	67.7	1.887										
1055A	4.06	34.539	1.56						65.4	1200	3.62	34.558	1.80	27.495	59.8	2.034										
1153A	3.72	34.553	1.80						61.1	1500	2.92	34.587	1.83	27.586	51.4	2.230										
1465	3.10	34.579	1.77						53.4	2000	2.04	34.644	2.44	27.705	39.9	2.514										
1541	2.79	34.592	1.88						49.8	2500	1.76	34.660	2.83	27.739	36.7	2.760										
2322	1.88	34.660	2.75						37.5	3000	1.59	34.675	3.03	27.763	34.4	2.988										
2713	1.66	34.659	2.93						36.0	3500	1.50	34.686	3.29	27.780	32.0	3.211										
2811	1.62	34.663	3.00						35.4	4000	1.48	34.687	3.92	27.782	32.6	3.433										
3820	1.45	34.685	3.61						32.5	4500	1.35	34.698	4.06	27.800	30.9	3.653										
39818	1.48	34.687	3.94						32.6	5000	1.32	34.699	4.06	27.803	30.6	3.870										
4100	1.44	34.687	3.79																							
4206	1.41	34.694	3.81																							
4256	1.40	34.692	3.93																							
4306	1.40	34.690	3.92																							
4355	1.38	34.700	3.99																							
4405	1.38	34.695	4.26																							
4456	1.35	34.697	4.11																							
4505	1.35	34.698	4.05																							
4526	1.30	34.698	4.16																							
4545	1.33	34.699	4.19																							
4566	1.32	34.698	4.27																							
4584	1.32	34.699	4.25																							
49968	1.33	34.698	4.65																							

RV ARGO

NOVA EXPEDITION III

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Z	T	S	O2	PO4	SI03	NO2	NO3	DT	Z	T	S	O2	SIGT	DT	DD	DOMINANT WAVES									
																06/25/67	1410	1620GMT	BOTTOM	WIND	SPEED	WEATHER	2	080	07
OC	28.0	34.23							598.6	0	28.0	34.23		21.038	598.6	0									
11C	28.00	34.24	4.62						597.9	10	28.00	34.24	4.62	21.045	597.9	.060									
31C	28.00	34.25	4.63						597.2	20	28.00	34.24		21.049	597.6	.120									
69C	27.02	34.90	D 4.90						520.1	30	28.00	34.25	4.63	21.052	597.2	.180									
80C	24.68	34.98	M 5.06						445.0	50	27.51	34.40	4.76	22.126	571.0	.297									
107C	21.60	34.96	4.74						363.0	75	26.39	34.94	4.98	22.068	498.1	.431									
126C	18.84	34.82	4.07						302.1	100	22.76	34.96	4.91	23.995	392.4	.543									
159C	14.64	34.52	3.10						230.2	125	18.98	34.83	4.11	24.914	304.0	.631									
182C	12.61	34.47	D 2.81						194.1	150	15.67	34.59	3.32	25.528	246.5	.701									
208C	11.13	34.58	.87						159.4	200	11.48	34.54	1.48	26.347	168.6	.807									
236C	10.75	34.68	.46						145.5	250	10.56	34.70	.46	26.642	140.6	.887									
291C	10.05	34.72	D 4.45						130.9	300	9.95	34.72	.47	26.758	129.6	.958									
354C	9.41	34.67	.62						124.4	400	9.02	34.66	.62	26.857	120.3	1.090									
509C	8.19	34.60	.61						110.7	500	8.22	34.60	.61	26.950	111.5	1.214									
626C	6.82	34.56	.68						95.5	600	7.36	34.57	.65	27.054	101.6	1.330									
1012C	4.77	34.560	1.36						81.9	700	6.55	34.56	.77	27.153	92.2	1.437					</				

RV ARGO

NOVA EXPEDITION III

12

LATITUDE 6 00.0N	LONGITUDE 179 00.0W	MO/DAY/YR 06/28/67	MESSENDER 0610	TIME GMT	BOTTOM 5722M	WIND 070	SPEED 13KT	WEATHER 2	DOMINANT WAVES 060 04 09						
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
3 28.8	34.15				629.6										
4045A 1.32	34.71	4.18			29.8										
4986A 1.29	34.721	3.89			28.7										
5643A 1.36	34.725				28.9										

RV ARGO

NOVA EXPEDITION III

13

LATITUDE 3 55.6N	LONGITUDE 178 47.3W	MO/DAY/YR 06/28/67	MESSENDER 2303	TIME 1818GHT	BOTTOM 5375M	WIND 110	SPEED 08KT	WEATHER 1	DOMINANT WAVES 080 06 09						
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
3 29.0	34.49				611.5	0	29.0	34.49	21.702	611.5	0				
108 29.00	34.503	4.55			610.6	10	29.00	34.503	4.55	21.712	610.6	.061			
538 28.90	34.507	4.60			607.1	20	28.98	34.504	4.56	21.720	609.8	.122			
626 28.90	34.525	4.58			605.8	30	28.95	34.505	4.57	21.729	609.0	.183			
110B 28.13	34.577	3.90			502.1	50	28.91	34.507	4.60	21.746	607.4	.305			
137B 21.10	34.796	3.58			360.5	75	28.15	34.620	4.44	22.081	575.3	.456			
190B 11.43	34.583	1.56			164.4	100	26.97	34.758	4.00	22.568	528.7	.593			
302C 8.32	34.62	1.62			111.7	125	23.49	34.779	3.76	23.644	425.9	.713			
599C 6.44	34.58	1.18			90.6	150	18.76	34.715	3.18	24.883	307.8	.806			
796C 5.29	34.56	1.71			78.4	200	11.40	34.584	1.56	26.398	163.8	.926			
101BC 4.46	34.56	1.98			67.7	250	10.55	34.582	1.58	26.549	149.5	1.007			
2496C 1.83	34.661	3.22			37.0	300	9.71	34.589	1.59	26.700	135.2	1.081			
3801C 1.42	34.692				31.8	400	8.12	34.618	1.57	26.976	108.9	1.210			
4125C 1.32	34.695				30.9	500	7.14	34.597	1.35	27.102	97.0	1.320			
4371C 1.27	34.705				29.8	600	6.43	34.560	1.18	27.170	90.6	1.423			
4607D 1.24	34.729U	4.49			700	5.79	34.546	1.61	27.241	83.8	1.519				
4617C 1.24	34.705				29.6	800	5.27	34.540	1.72	27.301	78.2	1.609			
4866C 1.28	34.721				28.7	1000	4.50	34.558	1.96	27.403	68.5	1.776			
5060C 1.28	34.723				28.5	1200	3.91	34.576	2.7479	61.3	1.926				
5296C 1.31	34.701U				28.7	2000	3.27	34.602	27.573	52.4	2.129				
52620 1.31	34.705U	4.56			2000	2.29	34.642	27.683	41.9	2.417					
5306C 1.32	34.724				28.7	2500	1.83	34.662	27.735	37.0	2.666				
					3000	1.68	34.672	27.755	35.1	2.897					
					3500	1.53	34.684	27.775	33.2	3.122					
					4000	1.37	34.693	27.795	31.4	3.339					
					4500	1.25	34.705	27.813	29.7	3.547					
					5000	1.28	34.723	27.825	28.6	3.753					

RV ARGO

NOVA EXPEDITION III

14

LATITUDE 2 09.6N	LONGITUDE 178 57.9W	MO/DAY/YR 06/30/67	MESSENDER 0911	TIME GMT	BOTTOM 5399M	WIND	SPEED	WEATHER	DOMINANT WAVES						
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0 28.6	34.97				564.3										
65 28.06	35.189	4.48			531.5										
109 28.00	35.260	4.27			524.6										
158 17.04	34.713	3.45			267.8										
206 12.68	34.622	3.08			169.5										
273 11.35	34.619	2.48			145.6										
379 9.54	34.714	1.68			123.2										
627 6.30	34.556	1.68			89.2										
821 5.00	34.571	2.01			72.9										
1066 4.54	34.571	2.23			67.9										

RV ARGO

NOVA EXPEDITION III

15

LATITUDE 1 00.0N	LONGITUDE 179 08.2W	MO/DAY/YR 07/01/67	MESSENDER 0210	TIME GMT	BOTTOM 4967M	WIND	SPEED	WEATHER	DOMINANT WAVES						
Z	T	S	02	PO4	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0 28.5	35.04				556.1										
69 27.66	35.390				504.6										
130 21.06	35.093				337.8										
196 16.72	35.076	3.34			234.3										
256 12.50	34.887	2.83			161.4										
313 11.06	34.804	2.34			141.7										
392 9.42	34.605	2.08			123.5										
857 9.15	34.564	2.11			75.0										

4) HEAT PROBE LOWERING WITH THREE Nansen BOTTLES ATTACHED.
 8) CAST II. 06/29/67 1111 GHT.
 C) CAST III.
 D) CAST I. HEAT PROBE LOWERING WITH TWO Nansen BOTTLES ATTACHED.

RV ARGO

NOVA EXPEDITION III

16

	LATITUDE 0 01.0S	LONGITUDE 179 07.9W	MO/DAY/YR 07/01/67	MESSENDER 1110	TIME 1556GMT	BOTTOM 5413M	WIND 120	SPEED 08KT	WEATHER 1	DOMINANT WAVES						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD	
0	28.0	35.40	4.5						514.5							
11	27.78	35.375	4.58						509.4							
50	27.47	35.307	4.56						499.0							
108	26.04	35.371	4.03						456.7							
132	21.97	34.954	3.45						371.8							
167	20.28	34.599	3.08						281.2							
215	14.64	35.030	3.28						192.9							
251A	13.20	34.945	3.17						170.4							
261	12.88	34.905	3.21						167.2							
317	11.15	34.844	2.42						143.8							
340A	10.74	34.797	1.78						136.7							
392A	9.22	34.687	1.90						120.2							
505A	7.56	34.706U	2.40													
825A	5.32	34.611	2.41						73.4							
1141A	3.92	34.568	2.34						61.9							

RV ARGO

NOVA EXPEDITION III

17

	LATITUDE 1 00.1S	LONGITUDE 179 08.0W	MO/DAY/YR 07/02/67	MESSENDER 0031	TIME GMT	BOTTOM 5494M	WIND 140	SPEED 08KT	WEATHER 1	DOMINANT WAVES 100 04 10						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD	
0	28.1	35.37	4.7						519.8							
11	27.88	35.303	4.67						512.0							
84	27.60	35.363	4.51						504.7							
129	25.03	35.640	3.69						407.6							
220	14.48	35.071	3.27						186.6							
313	11.01	34.803	2.49						140.9							
383	9.60	34.73	1.97						123.0							
523	7.24	34.585	2.25						99.2							
854	5.15	34.563	2.15						75.1							
1048	4.34	34.561	2.28						66.6							

RV ARGO

NOVA EXPEDITION III

18

	LATITUDE 1 58.0S	LONGITUDE 179 01.0W	MO/DAY/YR 07/02/67	MESSENDER 1210	TIME GMT	BOTTOM 5585M	WIND 090	SPEED 08KT	WEATHER 1	DOMINANT WAVES 130 04 08						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD	
0	28.1	35.37	4.4						519.8							
24	27.95	35.366	4.59						515.4							
96	27.82	35.361	4.62						511.7							
153	20.44	35.619	2.97						283.8							
209	15.18	35.207	3.04						191.2							
282	11.14	34.808	2.57						142.8							
376	10.02	34.759	1.92						127.5							
512	7.38	34.593	2.10						100.5							
1032	4.61	34.557	2.12						69.7							

A) CAST I.

RV ARGO

NOVA EXPEDITION III

19

LATITUDE 4 01.4S	LONGITUDE 178 44.5W	MO/DAY/YR 07/03/67	MESSINGER 0015	TIME 1033GMT	BOTTOM 5964M	WIND 150	SPEED 08KT	WEATHER I	DOMINANT WAVES						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0 29.0	35.40	4.7			546.2	0	29.0	35.40	4.7	22.385	546.2			0	
11A 28.73	35.399	4.57			537.6	10	28.75	35.399	4.58	22.468	538.3	.054			
54A 28.64	35.405	4.66			534.3	20	28.71	35.400	4.59	22.482	536.9	.108			
87A 28.16	35.556	4.49			508.3	30	28.69	35.401	4.61	22.490	536.2	.162			
145A 25.66	36.048	3.56			396.7	50	28.65	35.404	4.65	22.506	534.6	.269			
206A 17.71	35.403	2.64			233.0	75	28.39	35.489	4.58	22.653	520.5	.402			
315A 9.70	34.736	2.27			124.1	100	27.91	35.716	4.31	22.985	488.8	.529			
419A 8.48	34.656	1.96			111.5	125	26.92	35.939	3.92	23.472	442.3	.646			
641A 6.14	34.568	2.32			86.3	150	25.06	35.998	3.47	24.096	382.8	.751			
834A 4.98	34.544	2.33			74.7	200	18.56	35.465	2.72	25.507	248.5	.912			
1054A 4.20	34.583	2.31			63.5	250	13.58	35.066	2.49	26.343	168.9	1.020			
1720B 2.52	34.666	2.72			43.5	300	10.36	34.812	2.32	26.762	129.2	1.098			
2098B 2.11	34.668	2.92			40.1	400	8.70	34.668	2.00	26.925	113.8	1.226			
3246B 1.57	34.709	3.54			31.5	500	7.54	34.611	2.03	27.055	101.4	1.342			
3926B 1.37	34.713	3.96			29.9	600	6.52	34.577	2.22	27.172	90.4	1.447			
4623C 1.26	34.705	4.42			29.7	700	5.72	34.556	2.32	27.259	82.2	1.542			
4655B 1.26	34.707	4.51			29.6	800	5.14	34.546	2.33	27.320	76.3	1.630			
4950B 1.24	34.729	4.58			27.8	1000	4.36	34.572	2.31	27.429	66.0	1.792			
5246B 1.27	34.708	4.55			29.6	1200	3.74	34.604	2.37	27.519	57.5	1.936			
5540B 1.31	34.731	4.66			28.1	1500	2.95	34.635	2.55	27.620	48.0	2.125			
5829C 1.34	34.706U	4.68			2000	2.19	34.649	2.87	27.697	40.7	2.396				
5836B 1.34	34.725	4.64			28.8	2500	1.85	34.669	3.13	27.740	36.5	2.639			
5931B 1.36	34.724	4.62			29.0	3000	1.63	34.696	3.40	27.778	33.0	2.865			
						3500	1.48	34.713	3.69	27.802	30.7	3.078			
						4000	1.35	34.712	4.01	27.811	29.9	3.285			
						4500	1.27	34.706	4.34	27.812	29.8	3.491			
						5000	1.24	34.726	4.57	27.830	28.1	3.695			
						5500	1.30	34.728	4.63	27.827	28.3	3.902			

RV ARGO

NOVA EXPEDITION III

20

LATITUDE 7 42.9S	LONGITUDE 178 24.1W	MO/DAY/YR 07/04/67	MESSINGER 0750	TIME 0250GMT	BOTTOM 6027M	WIND 080	SPEED 08KT	WEATHER I	DOMINANT WAVES						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0 28.7	35.49	4.6			530.1	0	28.7	35.49	4.6	22.553	530.1	0			
10A 28.58	35.467	4.58			528.0	10	28.58	35.467	4.58	22.576	528.0	.053			
52A 28.60	35.487	4.60			527.2	20	28.58	35.471	4.58	22.578	527.8	.106			
83A 28.60	35.56	4.3			521.9	30	28.59	35.476	4.59	22.580	527.6	.159			
138A 27.50	35.778	4.06			472.0	50	28.60	35.486	4.60	22.584	527.2	.264			
195A 23.04	36.095	3.56			318.4	75	28.60	35.541	4.38	22.625	523.3	.396			
300A 13.98	35.026	2.46			179.8	100	28.26	35.640	4.22	22.811	505.4	.526			
398A 8.80	34.666	2.40			115.3	125	27.86	35.733	4.11	23.013	486.1	.651			
614A 6.44	34.574	2.67			89.6	150	26.74	35.863	3.97	23.472	442.3	.769			
800A 5.30	34.556	2.48			77.3	200	22.58	36.052	3.50	24.872	308.9	.960			
1015A 4.40	34.546	2.43			68.3	250	18.14	35.585	2.93	25.704	229.7	1.099			
1537B 2.80	34.613	3.14U			48.3	300	13.98	35.026	2.46	26.230	179.8	1.205			
2045B 2.14						400	8.78	34.665	2.40	26.911	115.1	1.361			
2336B 1.79	34.671	3.28			36.0	500	7.69	34.614	2.53	27.037	103.2	1.478			
2974B 1.65	34.684	3.50			34.0	600	6.59	34.579	2.65	27.163	91.3	1.584			
3363B 1.54	34.684	3.71			33.2	700	5.84	34.563	2.60	27.249	83.1	1.680			
3751B 1.45	34.696	3.96			31.7	800	5.30	34.556	2.48	27.310	77.3	1.770			
4161B 1.28	34.710	4.47			29.5	1000	4.45	34.546	2.43	27.399	68.9	1.936			
4336B 1.26	34.710	4.62			29.4	1200	3.73	34.562	2.53	27.487	60.6	2.085			
4531B 1.28	34.711	4.50			29.4	1500	2.88	34.607	2.71	27.603	49.5	2.281			
4726B 1.27	34.709	4.49			29.5	2000	2.17	34.659	3.12	27.706	39.8	2.553			
4923B 1.26	34.708	4.54			29.5	2500	1.81	34.672	3.27	27.746	36.0	2.791			
5067C	34.725U	4.63				3000	1.64	34.684	3.51	27.768	33.9	3.017			
5110B 1.28	34.717	4.64			29.0	3500	1.51	34.688	3.78	27.780	32.8	3.238			
5314B 1.30	34.706	4.61			29.9	4000	1.34	34.706	4.29	27.807	30.2	3.450			
5509B 1.30	34.709	4.64			29.7	4500	1.28	34.711	4.52	27.816	29.4	3.655			
5801B 1.36	34.715	4.63			29.7	5000	1.27	34.712	4.59	27.817	29.2	3.862			
5865C 1.38	34.708	4.71			30.3	5500	1.30	34.709	4.64	27.812	29.7	4.076			
5902B 1.36	34.710	4.72			30.0										

RV ARGO

NOVA EXPEDITION III

21

LATITUDE 9 27.6S	LONGITUDE 178 39.5W	MO/DAY/YR 07/05/67	MESSINGER 1526	TIME 1936GMT	BOTTOM 5036M	WIND 140	SPEED 19KT	WEATHER I	DOMINANT WAVES						
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
0 28.4	36.60	4.5			584.6										
9A 28.40	36.593	4.59			585.1										
50A 28.40	36.593				585.1										
117A 26.32	35.701	3.47			435.6										
190A 22.24	35.974	3.49			305.3										
267A 15.02	35.201	3.03			205.3										
479A 7.98	34.592	3.00			108.9										
784A 5.14	36.520	3.06			78.2										
4631C 1.28	36.712	4.54			29.3										
4844C 1.28	36.709	4.58			29.6										

A) CAST II.
 B) CAST III.
 C) CAST I. HEAT PROBE LOWERING WITH TWO Nansen BOTTLES ATTACHED.

RV ARGO

NOVA EXPEDITION V

H 47

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
27 46.75	156 07.3E	08/27/67	0913	GMT	4794M	310	35KT	2	14 08
Z	T	S	O2	PO4	S103	N02	N03	DT	
1	19.76	35.67			263.0				
674	12.12	35.06			141.7				
800	6.90								
1133	4.54								
1900	3.17	34.57			54.7				

RV ARGO

NOVA EXPEDITION V

H 59

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
26 54.75	166 06.2E	08/30/67	1315	GMT	3574M	060	13KT	1	
Z	T	S	O2	PO4	S103	N02	N03	DT	
1	21.42	35.50			317.8				
11	21.50	35.50			319.9				
110	21.08	35.61			300.9				
119		35.64							
129	20.70	35.64			289.0				
189	19.48	35.62			259.6				
492	12.80	35.08			152.9				
982	5.40	34.87 U							
1669	3.18	34.67 U							
1958	2.37	34.64			42.7				
2446	2.03	34.69			36.3				
2926	1.95	34.69			35.7				
3419	1.92	34.70			34.7				

RV ARGO

NOVA EXPEDITION V

H 67

LATITUDE	LONGITUDE	MO/DAY/YR	MESSENDER	TIME	BOTTOM	WIND	SPEED	WEATHER	DOMINANT WAVES
29 56.05	176 43.5E	09/06/67	0013	GMT	4260M			2	
Z	T	S	O2	PO4	S103	N02	N03	DT	
1	17.70	35.65			214.8				
12	17.67	35.66			214.8				
198	16.22	35.94			189.3				
392	13.40 A	35.17			157.8				
635	9.14 B	34.67			120.2				
645	9.02	34.73 U							
655	8.83	34.66 U							
677	6.23	34.62 U							
1169	4.19	34.49			70.4				
1656	2.72	34.62			47.1				
2144	2.13	34.67			38.6				
2631	1.92	34.68			36.2				
3117	1.85	34.69			35.0				
3603	1.86	34.69			35.1				
4091	1.92	34.69			35.5				

A) MEAN VALUE OF 13.35 AND 13.46 DEGREES.
 B) MEAN VALUE OF 9.10 AND 9.19 DEGREES.

RV ARGO

NOVA EXPEDITION VI

1

	LATITUDE 31 45.0S	LONGITUDE 177 15.0W	MO/DAY/YR 09/20/67	MESSENDER 0540	TIME 0010GMT	BOTTOM 9992M	WIND 270	SPEED 22KT	WEATHER I	Dominant Waves					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
10	17.62	35.632	5.27			214.2	0	17.62	35.632	25.867	214.2				0
35	17.42	35.623	5.29			210.2	10	17.62	35.632	5.27	25.867	214.2	.021		
48	17.35	35.630	5.58			208.1	20	17.55	35.627	5.28	25.880	213.0	.043		
88	16.92	35.618	5.24			199.2	30	17.47	35.624	5.29	25.898	211.3	.064		
126	16.02	35.505	4.84			187.4	50	17.34	35.631	5.56	25.935	207.8	.106		
166	15.44	35.490	5.16			176.0	75	17.11	35.630	5.35	25.990	202.5	.158		
204	14.68	35.394	5.03			167.1	100	16.64	35.581	5.08	26.063	195.6	.209		
289	13.16	35.21	4.75			150.2	125	16.04	35.508	4.85	26.146	187.8	.257		
381	11.52	35.004	4.74			135.0	150	15.66	35.495	5.01	26.223	180.4	.305		
475	9.76	34.759	4.50			123.4	200	14.76	35.405	5.05	26.354	167.9	.394		
590	8.12	34.569	4.65			112.6	250	13.84	35.292	4.86	26.464	157.5	.479		
718A	6.72	34.436	4.86			103.4	300	12.97	35.186	4.75	26.562	148.2	.559		
946B	5.40	34.452U	4.55U				400	11.15	34.952	4.69	26.729	132.4	.708		
965A	5.15	34.416	4.41			86.1	500	9.36	34.710	4.51	26.852	120.7	.845		
1053P	4.58	34.425	4.22			79.3	600	7.99	34.555	4.67	26.966	111.8	.971		
1667B	2.82	34.539	3.82			54.0	700	6.89	34.450	4.84	27.022	104.6	1.090		
1947B	2.52	34.607	3.48			46.4	800	6.34	34.447	4.78	27.093	97.8	1.202		
2064B	2.43	34.622	3.67U			44.6	1000	4.86	34.410	4.33	27.246	83.4	1.405		
2516R	2.11	34.655	3.42			39.6	1200	3.91	34.447	4.07	27.377	70.9	1.581		
3096B	1.80	34.699	4.06			33.9	1500	3.03	34.506	3.87	27.510	58.4	1.806		
3212B	1.76	34.723	4.14			31.8	2000	2.48	34.615	3.47	27.645	45.5	2.120		
4074B	1.16	34.728	4.80			27.4	2500	2.12	34.655	3.42	27.707	39.7	2.389		
4864B	1.06	34.720	4.81			27.3	3000	1.84	34.688	3.94	27.755	35.1	2.635		
6005C	1.17	34.720	4.57			28.0	3500	1.96	34.724	4.39	27.806	30.3	2.855		
7000C	1.30	34.716	4.56			29.2	4000	1.21	34.728	4.75	27.833	27.7	3.049		
7992C	1.46	34.708	4.67			30.9	4500	1.11	34.724	4.81	27.838	27.3	3.235		
8587C		34.714	4.15U				5000	1.06	34.720	4.78	27.837	27.4	3.422		
9181C	1.67	34.714	4.53			31.4	5500	1.10	34.720	4.66	27.855	27.6	3.614		
9679C	1.75	34.714	4.50			32.4	6000	1.17	34.720	4.57	27.830	28.0	3.815		
9982C	1.82	34.739U	4.26				6500	1.23	34.719	4.57	27.825	28.5	4.027		
							7000	1.30	34.716	4.56	27.818	29.2	4.251		
							7500	1.38	34.712	4.62	27.809	30.0	4.489		
							8000	1.46	34.708	4.67	27.800	30.9	4.741		
							8500	1.55	34.710	4.62	27.795	31.3	5.009		
							9000	1.64	34.713	4.56	27.791	31.7	5.291		
							9500	1.72	34.714	4.51	27.786	32.2	5.587		

RV ARGO

NOVA EXPEDITION VI

2

	LATITUDE 31 11.0S	LONGITUDE 177 08.0W	MO/DAY/YR 09/24/67	MESSENDER 1921	TIME GMT	BOTTOM 8774M	WIND 270	SPEED 22KT	WEATHER I	Dominant Waves					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
3335	1.62	34.761U	4.04				27.8								
4322	1.17	34.723	4.63				27.6								
5307	1.10	34.720	4.61				27.6								
6291	1.19	34.641U	4.59												
7274	1.34	34.70	4.09				30.7								
8256	1.90	34.71	4.40				31.0								

RV ARGO

NOVA EXPEDITION VI

2

	LATITUDE 30 53.0S	LONGITUDE 176 49.0W	MO/DAY/YR 09/25/67	MESSENDER 1222	TIME 1435GMT	BOTTOM 8219M	WIND 270	SPEED 22KT	WEATHER I	Dominant Waves					
Z	T	S	02	P04	S103	N02	N03	DT	Z	T	S	02	SIGT	DT	DD
870D	6.17	34.43	4.63				97.0								
1297E	3.66	34.47	3.96				66.8								
1737E	2.62	34.596	3.69				48.2								
3034E	1.78	34.708	3.89				35.1								
3965E	1.20	34.73	4.35				27.5								

A) THE DEPTHS OF THE LAST TWO NANSEN BOTTLES OF CAST I WERE DETERMINED FROM AN EXTRAPOLATED DEPTH CURVE DUE TO MALFUNCTIONING OF THE UNPROTECTED REVERSING THERMOMETERS.

B) CAST II. 9/20/67 0937 GMT.

C) CAST III. 9/21/67 0010 GMT.

D) CAST III. THESE DATA HAVE NOT BEEN LISTED WITH CAST I BECAUSE OF A CHANGE IN POSITION WHEN DIFFICULTY WAS EXPERIENCED WITH THE CAST.

E) CAST II.

RV ARGO

NOVA EXPEDITION VI

4

	LATITUDE 27 28.0S	LONGITUDE 175 24.0E	MO/DAY/YR 09/27/67	MESSENDER 0923	TIME 1423GMT	BOTTOM 4632M	WIND 160	SPEED 04KT	WEATHER 2	DOMINANT WAVES 160 03 12					
Z	T	S	D2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	20.30	35.559						284.6	0	20.30	35.559		25.127	284.6	0
35	20.09	35.601	5.20					276.2	10	20.24	35.571		25.152	282.2	.028
49	19.70	35.652	5.27					262.8	20	20.18	35.583		25.177	279.8	.057
99	18.62	35.673	4.89					234.8	30	20.12	35.595		25.202	277.4	.084
167	17.47	35.604	4.77					212.8	50	19.68	35.654	5.27	25.362	262.0	.139
226	16.25	35.500	4.64					192.8	75	19.10	35.682	5.12	25.536	245.7	.203
293	14.88	35.367	4.55					173.2	100	18.60	35.672	4.89	25.654	234.5	.264
391	12.69	35.103	4.43					149.1	125	18.17	35.657	4.82	25.750	225.4	.322
489	10.83	34.882	4.47					132.0	150	17.75	35.629	4.78	25.833	211.5	.378
605	8.66	34.639	4.58					115.3	200	16.80	35.548	4.70	26.001	201.5	.486
732	7.36	34.501	4.73					107.0	250	15.76	35.455	4.60	26.170	185.5	.586
888	6.00	34.419						95.8	300	14.72	35.348	4.54	26.319	171.3	.680
1056	4.90	34.332	4.26					82.2	400	12.51	35.082	4.43	26.572	147.3	.849
1173	3.92	34.470	4.02					69.2	500	10.60	34.854	4.48	26.753	130.1	.998
1467A	2.96	34.576	3.42					52.4	600	8.74	34.668	4.57	26.903	115.8	1.133
1899A	2.35	34.629	3.49					43.4	700	7.63	34.528	4.70	26.979	108.7	1.257
2186A	2.12	34.655	3.50					39.6	800	6.73	34.454	4.69	27.046	102.3	1.374
2301A	2.08	34.662	3.51					36.8	1000	5.27	34.420	4.40	27.206	87.1	1.587
2378A	2.02	34.675	3.54					37.4	1200	3.78	34.481	3.95	27.418	67.1	1.763
2812A	1.90	34.676	3.77					36.4	1500	2.89	34.584	3.43	27.584	51.4	1.971
3248A	1.86	34.688	3.59					35.2	2000	2.25	34.660	3.69	27.684	41.8	2.254
3366A	1.85	34.689	3.56					35.0	2500	1.96	34.673	3.62	27.734	37.1	2.503
3463A	1.84	34.681	3.62					35.6	3000	1.88	34.681	3.71	27.747	35.9	2.744
3707A	1.86	34.690	3.65					35.1	3500	1.84	34.682	3.62	27.751	35.6	2.987
4170A	1.90	34.680	3.66					36.1	4000	1.88	34.685	3.66	27.750	35.6	3.239
4597A	1.95	34.684	3.66					36.2	4500	1.94	34.683	3.66	27.744	36.2	3.503

RV ARGO

NOVA EXPEDITION VI

5

	LATITUDE 23 43.5S	LONGITUDE 176 09.0E	MO/DAY/YR 09/29/67	MESSENDER 1817	TIME 0342GMT	BOTTOM 4438M	WIND 130	SPEED 11KT	WEATHER 1	DOMINANT WAVES 130 03 06					
Z	T	S	C2	P04	S103	N02	N03	DT	Z	T	S	D2	SIGT	DT	DD
0	20.90	35.472						306.3	0	20.90	35.472		24.899	306.3	0
20	20.87	35.470	5.05					305.6	10	20.88	35.471		24.903	305.9	.031
49	20.05	35.615	4.95					274.2	20	20.87	35.470	5.05	24.906	305.6	.061
98	18.60	35.620	4.54					238.2	30	20.64	35.515	5.03	25.003	296.4	.091
166	17.84	35.631	4.47					212.4	50	20.02	35.616	4.94	25.246	273.3	.149
214	16.60	35.519	4.32					199.2	75	19.24	35.635	4.73	25.463	252.6	.215
291	15.08	35.392	4.53					175.5	100	18.58	35.672	4.54	25.622	237.5	.277
388	13.12	35.180	4.38					151.6	125	18.28	35.638	4.51	25.709	229.3	.336
684	10.5	34.806	4.30					132.0	150	18.01	35.639	4.49	25.778	222.7	.394
598	8.14	34.562	4.54					113.4	200	16.98	35.554	4.36	25.962	205.2	.504
725	6.56	34.435	4.68					101.5	250	15.86	35.458	4.40	26.151	187.2	.606
878	5.46	34.400	4.50					90.8	300	14.91	35.378	4.52	26.300	173.1	.700
1043	4.28	34.443	4.09					74.9	400	12.80	35.132	4.37	26.554	144.0	.871
1158	3.68	34.50	3.49					64.7	500	10.12	34.760	4.33	26.765	129.0	1.021
1555A	2.77	34.595	3.42					49.4	600	8.11	34.559	4.56	26.932	113.1	1.152
1838	2.40	34.627	3.49					43.9	700	6.80	34.452	4.67	27.035	103.3	1.271
1945A	2.29	34.644	3.41					41.8	800	5.97	34.407	4.63	27.110	96.3	1.382
2285A	2.06	34.656	3.42					39.1	1000	4.57	34.425	4.23	27.290	79.2	1.578
2402A	2.00	34.667	3.46					37.8	1200	3.53	34.515	3.48	27.470	62.1	1.739
2773A	1.87	34.680	3.41					35.9	1500	2.83	34.590	3.43	27.595	50.3	1.937
3019A	1.84	34.675	3.40					36.0	2000	2.24	34.668	3.41	27.691	41.2	2.215
3263A	1.84	34.685	3.57					35.3	2500	1.96	34.674	3.45	27.735	37.0	2.463
3460A	1.84	34.688	3.56					35.1	3000	1.84	34.676	3.40	27.746	36.0	2.703
3578A	1.84	34.679	3.58					35.7	3500	1.84	34.686	3.57	27.754	35.3	2.946
4052A	1.87	34.681	3.59					35.8	4000	1.86	34.681	3.59	27.748	35.8	3.197
4423A	1.92	34.677	3.61					36.5							
4426A	1.91	34.684	3.56					35.9							

A) CAST I.

B) TEMPERATURE INFERRED FROM PRESSURE THERMOMETER AND WIRE LENGTH.

RV ARGO

NOVA EXPEDITION VI

6

Z	T	S	C2	PO4	S103	N02	N03	DT	NOVA EXPEDITION VI							
									MESSENGER	TIME	ROTTON	WIND	SPEED	WEATHER	DOMINANT WAVES	
21 49.5S	177 58.0E	09/30/67	2100	0040GMT	4145M	120	11KT		1	120	03	06				
0	23.5	35.356						384.5	0	23.5	35.356		24.078	384.5	0	
69	23.16	35.35	4.89					375.5	10	23.45	35.355		24.092	383.2	.038	
119	22.30	35.554	4.73					337.3	20	23.40	35.354		24.106	381.9	.077	
156	21.78	35.616	4.68					318.9	30	23.35	35.353		24.119	380.6	.115	
200	20.89	35.655	4.10					292.8	50	23.25	35.351		24.147	378.0	.191	
271	18.60	35.60	4.22					239.7	75	23.07	35.373	4.88	24.218	371.2	.285	
359	16.44	35.368	4.16					206.7	100	22.65	35.474	4.81	24.414	352.5	.377	
448	13.52	35.097	4.21					165.5	125	22.22	35.567	4.70	24.607	334.1	.464	
674	7.1	34.469	4.54					105.9	150	21.87	35.609	4.53	24.737	321.7	.547	
907	4.98	34.410	4.16					84.7	200	20.89	35.655	4.10	25.041	292.8	.704	
1151A	3.86	34.480	3.71					67.9	250	19.31	35.627	4.18	25.440	254.8	.845	
1634A	2.76	34.591	3.52					49.6	300	17.89	35.538	4.21	25.730	227.2	.970	
2115A	2.22	34.65	3.43					40.8	400	15.13	35.241	4.17	26.148	187.6	1.188	
2596A	1.95	34.673	3.52					37.0	500	11.79	34.902	4.30	26.573	147.2	1.368	
2836A	1.88	34.68	3.53					36.0	600	8.89	34.625	4.45	26.862	119.8	1.513	
3076A	1.85	34.680	3.60					35.7	700	6.72	34.451	4.52	27.045	102.4	1.635	
3318A	1.84	34.687	3.55					35.1	800	5.61	34.412	4.38	27.159	91.6	1.743	
3560A	1.84	34.684	3.57					35.4	1000	4.46	34.431	3.98	27.306	77.7	1.932	
3808A	1.85	34.687	3.58					35.2	1200	3.70	34.494	3.69	27.436	65.4	2.095	
4056A	1.87	34.688	3.58					35.3	1500	2.96	34.567	3.57	27.564	53.2	2.303	
								2000	2.31	34.641	3.44	27.680	42.2	2.593		
								2500	1.99	34.671	3.50	27.731	37.5	2.846		
								3000	1.86	34.680	3.58	27.748	35.8	3.086		
								3500	1.84	34.685	3.56	27.754	35.3	3.328		
								4000	1.86	34.688	3.58	27.754	35.3	3.578		

A) CAST I.

B) TEMPERATURE INFERRED FROM PRESSURE THERMOMETER AND WIRE LENGTH.

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